STATE OF MINNESOTA DISTRICT COURT 09:03:42

COUNTY OF RAMSEY SECOND JUDICIAL DISTRICT

- -

THE STATE OF MINNESOTA,
BY HUBERT H. HUMPHREY, III,
ITS ATTORNEY GENERAL,

AND

BLUE CROSS AND BLUE SHIELD
OF MINNESOTA,

PLAINTIFFS,

VS. FILE NO. C1-94-8565

PHILIP MORRIS INCORPORATED, R.J.
REYNOLDS TOBACCO COMPANY, BROWN &
WILLIAMSON TOBACCO CORPORATION,
B.A.T. INDUSTRIES P.L.C., LORILLARD
TOBACCO COMPANY, THE AMERICAN
TOBACCO COMPANY, LIGGETT GROUP, INC.,
THE COUNCIL FOR TOBACCO RESEARCH-U.S.A.,
INC., AND THE TOBACCO INSTITUTE, INC.,

DEFENDANTS.

- -

DEPOSITION OF
TIMOTHY WYANT, Ph.D.
VOLUME III

January 24, 1998
9:03 a.m.

REPORTED BY: JENNIFER S. SATI
REGISTERED PROFESSIONAL REPORTER
CERTIFIED REALTIME REPORTER
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DEPOSITION OF TIMOTHY WYANT, Ph.D., VOLUME

III, taken at the Law Offices of Robins, Kaplan, Miller & Ciresi, 2800 LaSalle Plaza, 800 LaSalle Avenue, Minneapolis, Minnesota, on the 24th day of January, 1998, commencing at 9:03 a.m., before Jennifer S. Sati, Notary Public.

* * * *

A P P E A R A N C E S

On Behalf of the Plaintiffs:

Robins, Kaplan, Miller & Ciresi
2800 LaSalle Plaza
800 LaSalle Avenue
Minneapolis, Minnesota 55402

BY: John N. Love
Thomas L. Hamlin

On Behalf of Philip Morris Incorporated:

Arnold & Porter
555 Twelfth Street, N.W.
Washington, D.C. 20004-1202

BY: Murray Garnick

On Behalf of R.J. Reynolds Tobacco Company:

Jones, Day, Reavis & Pogue
1900 Huntington Center
Columbus, Ohio 43215

BY: Peter J. Biersteker

* * * *

I N D E X

EXAMINATION BY: PAGE

MR. BIERSTEKER 345

CERTIFIED QUESTIONS:
Pages 415 and 474

* * * * *

EXHIBIT INDEX

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1293	Supplemental Expert Report of Brian P. McCall, Ph.D.	417

P R O C E E D I N G S

TIMOTHY WYANT, Ph.D.

the Witness in the above-entitled matter after having been previously duly sworn testifies and says as follows:

EXAMINATION

BY MR. BIERSTEKER:

Q. Good morning, Doctor. As you know, I'm Peter Biersteker, and this is a continuation of your deposition from last summer. 09:04:58 09:05:00 09:05:04

You understand that you're still under oath, correct? 09:05:04 09:05:06

A. Yes. 09:05:06

Q. In general, why do statisticians do statistical significance testing? 09:05:14 09:05:14

A. Why do they do statistical significance testing? 09:05:20

Q. Yes. 09:05:22

A. There are some fields on some applications of statistics in which it's conventional to summarize a single set of data with a yes/no answer. 09:05:46 09:05:52 09:06:00

There are also situations in the course of work where simple yes/no answers are needed in some rule as sometimes applied. 09:06:04 09:06:12 09:06:16

Q. Well, let me ask it this way: One of the reasons, then, why statisticians do statistical significance testing is because of convention; is that right? 09:06:34 09:06:36 09:06:40

A. Yes. 09:06:40

Q. Okay. And another reason is to get the answer to a yes/no question; is that also right? 09:06:48 09:06:50

A. To get an answer to a yes/no question. 09:06:56

Q. Is there more than one right answer to a yes/no 09:07:10

question? 09:07:12

A. In the context of significance testing, yes, there 09:07:20
certainly could be. 09:07:22

Q. And how is that? 09:07:24

A. Significance tests in applications where they're 09:07:34
appropriate are used as one means of summarizing 09:07:42
strength of evidence, and that strength is usually 09:07:46
on a continuum. 09:07:50

So yes/no questions as a way of 09:07:52
simplifying that continuum are through arbitrary 09:08:00
means applied in certain ways to distinguish part of 09:08:10
the continuum from the rest. 09:08:12

Q. So another reason to do statistical significance 09:08:20
testing, in general, is to assess the strength of 09:08:24
the evidence; is that right? 09:08:26

A. It's one method of summarizing strength of evidence 09:08:30
in some situations. 09:08:32

Q. Now, you used the word arbitrary. Is statistical 09:08:46
significance testing arbitrary? 09:08:48

A. It is arbitrary in the sense that a number of 09:09:00
conventions are used and there is nothing 09:09:02
mathematically optimal about any one of them. 09:09:06

Q. Have you done statistical significance testing in 09:09:30
your prior work? 09:09:32

A. I have reported the results of significance tests. 09:09:46

Q. What confidence level did you use in your prior 09:10:04
published work where you did statistical 09:10:08
significance testing? 09:10:10

A. I've used different levels. 09:10:24
Q. Well, which ones did you use? 09:10:28
A. I've used 5 percent, 10 percent, and probably others that I can't recall. 09:10:38
Q. Do you recall in which of your prior publications you used 10 percent? 09:10:56
A. No. 09:11:00
Q. Are you sure that you've done so? 09:11:06
A. If I can clarify, I think your previous question had to do with my previous work. My previous publications I'm not -- that I'm not sure about. 09:11:10
Q. Let me just -- so you're not sure that you've ever used a 10 percent confidence level in your prior published work; is that right? 09:11:24

A. That's correct. 09:11:32
Q. Are you sure that you've used a 5 percent significance level in your prior published work? 09:11:34
A. I'm not sure that I've ever done a significance test at a pre-specified level in a published work. I just don't know. 09:12:42
Q. In your November 17 report that you did jointly with Drs. Zeger and Miller, you did a calculation of relative errors, right? 09:13:10
A. That's correct. 09:13:18
Q. And that's part of the process of doing statistical significance testing, right? 09:13:20
A. It can be part of the process. 09:13:24

Q. Why did you do that in this case? 09:13:38
A. Why did I do what? 09:13:40
Q. Calculate the relative errors? 09:13:46
A. Well, in this, in our peer reports, we have taken causation as a given based on Dr. Samet's work and looked at some statistical measures of the extent of which smoking attributable dollars in Minnesota reflect that causation. 09:13:54 09:13:58 09:14:04 09:14:10 09:14:14
Those measures are statistical and they have their various sources of certainty and uncertainty associated with them. 09:14:16 09:14:18 09:14:20
Q. So you did significance testing in this case to 09:14:48

gauge the uncertainty of your estimates; is that a fair characterization? 09:14:52 09:14:54
A. No, I would not characterize what we've done as significance testing. 09:14:56 09:14:58
Q. What would you characterize it as? 09:15:08
A. Summarizing the relative errors I would characterize as summarizing uncertainty in the measures related to reliance on government surveys. 09:15:16 09:15:24 09:15:26
Q. There was no yes/no question that you were attempting to assess here? 09:15:42 09:15:42
A. No. 09:15:44
Q. What do the relative errors tell you? 09:16:08
A. They summarize for the different measures involved what one would expect to happen if those surveys were repeated but none of the rest of the methodology changed. 09:16:18 09:16:24 09:16:28 09:16:28

Q. Let's say, for example, in your nursing home estimate the relative error was about 175 percent, do you remember that? 09:16:44 09:16:52 09:16:52

A. I don't remember precisely. 09:16:54

MR. BIERSTEKER: We can mark our first exhibit then. 09:17:02 09:17:02

(Defendants' Exhibit 1292 marked for identification by the reporter.) 09:17:32

BY MR. BIERSTEKER:

Q. Doctor, the reporter has marked as Exhibit 1292 what is your supplemental report from November of last year. Is that what it is? 09:17:38 09:17:44 09:17:46

A. It appears to be. 09:17:50

Q. And if you'll turn to page 6, sir. 09:17:54

A. Yes. 09:17:54

Q. Actually, is there scribbling in the margin there? 09:18:00

A. For me to avert my eyes? 09:18:04

Q. If it is, it's mine. The marginalia in page 6 is my scribbling. 09:18:08 09:18:10

You report there the relative error for your nursing home estimate is 175.9 percent, right? 09:18:12 09:18:16

A. That is correct. 09:18:16

Q. Okay. So it's about 175 percent. What does that tell you about the uncertainty in your nursing home estimate? 09:18:24 09:18:30 09:18:30

A. It tells you it's more uncertain than the measures for major smoking-related disease or for the 09:18:38 09:18:44

self-reported poor health. 09:18:46

Q. Have you ever in any of your published work calculated relative errors but never done any statistical significance testing? 09:18:50 09:19:02 09:19:04

A. Yes. 09:19:04

Q. In which publication did you do that? 09:19:10

A. I believe there was an old Water Resources article. 09:19:22

There were different sections of that article. I think some sections may have done some significance testing of some sort, but I know that there were parts, in fact, somewhat similar in some respects to what we were doing here where relative errors were reported but no testing done. 09:19:26 09:19:30 09:19:32 09:19:40 09:19:42 09:19:44

Q. But in parts of the article testing was done? 09:19:48

A. On other issues. I would have to double-check that, but I think that may be the case. 09:19:52 09:19:54

Q. Now, for some groups your model calculates negative smoking attributable fractions, right? 09:20:24 09:20:28

A. I'm sorry, could you ask that again? 09:20:32

Q. Yes, for some groups your model calculates negative smoking attributable fractions, right? 09:20:34 09:20:36

A. Yes. 09:20:48

Q. How do you interpret those negative smoking attributable fractions? 09:21:00 09:21:02

MR. LOVE: Just a minute -- 09:21:06

MR. BIERSTEKER: We're coming back to significance, don't worry. 09:21:08 09:21:12

MR. LOVE: All right.

BY MR. BIERSTEKER:

Q. We are. Go ahead, you may answer. 09:21:16

Do you want the question repeated? 09:21:16

A. Please. 09:21:16

(The requested portion read back.) 09:21:18

THE WITNESS: The smoking attributable 09:21:42
fractions are statistical measures of the size of an 09:21:56
underlying smoking attributable fraction. 09:22:02
Statistical measures can fluctuate and occasionally 09:22:16
a measure can go negative. 09:22:20

BY MR. BIERSTEKER:

Q. So if there's a negative smoking attributable 09:22:36
fraction calculated by your model, it doesn't mean 09:22:50
that smoking caused reduced expenditures, right? 09:22:58

A. No, it doesn't mean that. 09:23:02

Q. And if you get a positive smoking attributable 09:23:08
fraction, it doesn't mean that smoking caused 09:23:12
expenditures, either, right? 09:23:14

A. We assume our cause based on the work of Dr. Samet, 09:23:20
and these smoking attributable fractions are simply 09:23:24
measures of size. 09:23:26

Q. So the answer to my question is the mere fact that 09:23:32
you get a positive smoking attributable fraction 09:23:34
does not mean that smoking caused increased 09:23:36
expenditures, right? 09:23:38

A. I think that's correct. 09:23:48

Q. In the case where you get a negative smoking 09:24:02

attributable fraction, has your model estimated that smokers cost less than nonsmokers? 09:24:28 09:24:34

A. It would indicate that in a particular subgroup where it occurred -- pardon me, I have to think a second about that. 09:25:28 09:25:52 09:25:52

I believe it indicates that in the subgroups where it occurs that there's smaller medical expenditures on average for smokers than for similarly situated never-smokers in a given year. 09:27:12 09:27:22 09:27:28 09:27:32

Q. Does your interpretation of your smoking attributable fractions depend in any way on the size of the relative error? 09:27:52 09:28:02 09:28:04

A. Well, yes, in the sense that based on these data alone the measures for certain expenditure categories have more uncertainty associated with the government surveys than some of the other measures. 09:28:58 09:29:10 09:29:18 09:29:20

Q. All right. And the fact that the degree of uncertainty varies from -- well, so what you're saying is that the degree of uncertainty in your various measures is different, right? 09:29:48 09:29:54 09:29:56 09:29:58

A. Well, this contribution to the uncertainty is certainly different, yes. 09:30:06 09:30:08

Q. And how, if at all, does that affect your interpretation of your estimates? 09:30:14 09:30:16

A. Some are less certain in some respects than others. 09:30:40

Q. And it tells you nothing more than that; is that right? 09:30:50

A. Not that I can think of at this moment. 09:31:04
Q. What is a high relative error, in your view? 09:31:26
A. I don't think there's any general answer to that. 09:31:40
Q. Now, you didn't compute relative errors for your core model, correct? 09:31:48 09:31:54
A. Yes, I did. 09:31:56
Q. You did? 09:31:56
A. Yes. 09:31:56
Q. Are those presented to us under number 17? 09:31:58
A. No. 09:32:00
Q. Did you calculate relative errors for your testimation model? 09:32:14 09:32:16
A. No. 09:32:18
Q. And all that you have reported in your November 17 report are the relative errors for the so-called full model, right? 09:32:24 09:32:28 09:32:30
A. That's correct. 09:32:32
Q. What results did you obtain in your calculations concerning the core model? 09:32:42 09:32:46
A. The relative errors were smaller than for the final model or the full model. 09:32:52 09:32:54
Q. How much smaller were they? 09:32:54
A. They were generally in the ballpark of 10 to 20 percent. 09:33:04 09:33:04
Q. Is there any reason why those results were not 09:33:22

provided to us? 09:33:22

A. A full model has been the basis for what we've presented as our estimates. 09:33:36 09:33:38

Q. Now, in calculating the relative errors in your November 17 report, the only sources of uncertainty that you took into account were those that were due to your reliance on the NMES survey and the NHANES survey, right? 09:34:06 09:34:18 09:34:24 09:34:28 09:34:30

A. I'm sorry, could you repeat that? 09:34:32

Q. The sources of uncertainty that you took into account in calculating your relative errors was uncertainty due to the fact that you relied on the NMES survey and the NHANES survey, right? 09:34:34 09:34:38 09:34:40 09:34:44

A. The simple calculation of relative errors, that is correct. 09:35:06 09:35:06

Q. And you relied on the NMES survey and the NHANES survey to determine the relationship between smoking and disease, certain personal characteristics, and expenditures, right? 09:35:18 09:35:28 09:35:40 09:35:42

A. Yes, in the sense that we use those data to measure the size of that relationship, yeah. 09:35:58 09:36:00

Q. And you also rely upon imputed or filled in or estimated values for missing information in NMES to quantify that relationship, right? 09:36:18 09:36:28 09:36:30

A. In the data that we used, there were imputed values, 09:36:36

yes. 09:36:36

Q. And the uncertainty in those imputed values was not 09:36:48

taken into account in calculating your relative errors, was it? 09:36:52 09:36:54

A. To some extent it was. 09:37:44

Q. How? 09:37:44

A. There were terms in the models to capture the effects of imputation on the size of the various estimates. 09:38:02 09:38:10 09:38:12

Q. And how was the uncertainty, then, in the imputations captured, even if one of the variables was percent missing information in some of your regressions? 09:38:42 09:38:46 09:38:50 09:38:52

A. Well, relative error is a function of both the size of the estimate and the standard error, so to the extent that the imputation method introduced some change in the size of the estimate, then that is to some extent taken into account by having it in the model. 09:39:06 09:39:10 09:39:18 09:39:24 09:39:28 09:39:28

Q. The relative error is a fraction, right? 09:39:34

A. Yes. 09:39:36

Q. And what is the numerator in that fraction? 09:39:40

A. The standard error. 09:39:48

Q. Did you take into account at all the uncertainty of your imputations in estimating the standard error? 09:39:58 09:40:02

A. I think to be clear, what we're -- I believe we're talking about here are not our imputations but those carried out by the agency that produced NMES. 09:40:10 09:40:14 09:40:20

Q. Well, there were some of both, actually, weren't 09:40:24

there? 09:40:24

A. That's correct. Although, to renew my language a bit, much of what we did I would have termed as estimation rather than imputation. 09:40:34 09:40:38 09:40:40

Q. Could we just call it all imputation, otherwise it's going to get convoluted? 09:40:44 09:40:46

A. No, I'm sorry, our question? 09:40:50

Q. Never mind. Again, is the uncertainty due to the imputed, filled in or estimated missing values reflected at all in your estimate of the standard error? 09:40:54 09:41:00 09:41:08 09:41:10

A. The ones performed by NMES I don't believe -- by NMES I mean whoever, whatever acronym produced NMES -- no, we did not take that into account. 09:41:20 09:41:26 09:41:30

Q. Did your estimate of the standard error take into account uncertainty in the imputed, filled in or estimated values that plaintiffs made? 09:41:38 09:41:48 09:42:00

MR. LOVE: I'll object to the form of the question, plaintiffs. 09:42:04 09:42:10

BY MR. BIERSTEKER:

Q. You know what I mean, go ahead. 09:42:12

A. I believe the answer to your question is yes. 09:42:16

Q. How much of the uncertainty in the imputations that were made by yourself or Dr. Miller or Dr. Zeger is reflected in your estimate of the standard error? 09:42:32 09:42:40 09:42:46

A. I believe that all of the uncertainty related to the two government surveys that relates to our methods of estimating missing information is captured by the 09:44:50 09:45:00 09:45:08

jackknife. 09:45:10

Q. Is the uncertainty related to the two government surveys the same thing as the uncertainty in the imputed, estimated or filled in values that you made? 09:45:32 09:45:38 09:45:50 09:45:50

A. I'm sorry, I'm going to have to ask you to repeat that. 09:46:06 09:46:06

Q. Yeah, is there a difference between uncertainty related to the government surveys on the one hand and uncertainty related to your imputed, estimated or filled in values? 09:46:10 09:46:14 09:46:18 09:46:20

A. I guess I'm just not quite sure how to answer that. Is there a way you can rephrase the question? 09:46:56 09:47:00

Q. What troubles you? 09:47:02

A. I'm just not sure I understand. 09:47:04

Q. Well, any time you go out and take a survey and you ask a person a question -- 09:47:18 09:47:18

A. Yes. 09:47:20

Q. -- there's uncertainty because you're relying on a survey, right? 09:47:20 09:47:20

A. Yes. Well, I suppose there could be exceptions, but typically that's the case. 09:47:24 09:47:26

Q. And if you went out and took a different survey, you might get a different answer, right? 09:47:28 09:47:30

A. Yes. 09:47:30

Q. But let's suppose some people in our survey didn't answer some of the questions, all right? 09:47:42 09:47:44

A. Yes. 09:47:44
Q. And for those people we imputed or filled in or estimated what their answer would have been had they given us one, okay? 09:47:52 09:47:54 09:47:56
A. Is that -- your question is did we do that? 09:48:16
Q. Well, you did, didn't you? 09:48:18
A. Yes. 09:48:20
Q. All right. Now, does your calculation of the relative error -- let me put it this way, your calculation of the relative error you believe captures all the uncertainty due to the fact that you relied on these two government surveys, right? 09:48:28 09:48:40 09:48:42 09:48:44 09:48:48
A. I believe our calculations capture all of the uncertainty associated with the application of the formulas we chose to those government survey data that would be reflected in taking the survey over 09:52:00 09:52:08 09:52:16 09:52:30

again. 09:52:30
Q. But you didn't capture the uncertainty due to the fact that the government imputed, estimated or filled in missing values for certain variables, right? 09:52:36 09:52:42 09:52:46 09:52:46
MR. LOVE: That's been asked and answered, but you can answer again. 09:52:50 09:52:52
THE WITNESS: Well, if we're talking about the standard error part of the relative error, we did not capture that. 09:52:54 09:52:58 09:52:58
BY MR. BIERSTEKER:
Q. All right. And I believe you suggested earlier that 09:53:06

some of the uncertainty in the standard error -- I take that back. 09:53:16 09:53:16

That your estimate of the standard error takes into account some of the uncertainty due to the imputations, filling in or estimating of missing values that you knew, right? 09:53:18 09:53:24 09:53:30 09:53:30

A. I believe that's correct, yes. 09:53:40

Q. And now my question, again, is how much of that uncertainty was taken into account and how much wasn't? 09:53:42 09:53:44 09:53:46

A. I believe all of the uncertainty related to the methods we used to impute that information that was missing in those surveys or estimate is captured, 09:53:54 09:54:00 09:54:14

again, to the extent of how those imputations or estimations would vary if the survey were replicated. 09:54:22 09:54:24 09:54:30

Q. Is what you're trying to say is that you captured the uncertainty in the imputations to the extent that the values that you input into your estimation -- your imputation procedure might have been different if a different survey were taken; is that right? 09:54:34 09:54:36 09:54:42 09:54:46 09:54:48

MR. LOVE: I object to the form, but you can answer. 09:54:50 09:54:50

THE WITNESS: I apologize, again, but would you please restate it. 09:54:54 09:54:58

BY MR. BIERSTEKER:

Q. Why don't you explain to me why you think you captured all of that uncertainty? 09:55:10 09:55:12

A. Well, in our use of the jackknife method, we apply those methods over and over again to what are sometimes called pseudo replicates of a survey to see what would happen, so we see the variation that results from applying those calculations to estimates of what would happen with different versions of the survey. 09:55:26 09:55:30 09:55:34 09:55:42 09:55:46 09:55:50 09:55:52

Q. But uncertainty due to the specification of the way in which the missing values were imputed is not taken into account, right? 09:56:08 09:56:12 09:56:14

MR. LOVE: I object to the form. 09:56:18

THE WITNESS: The uncertainty related to using this particular specification is captured. There is other uncertainty related to the form of the specification that is not necessarily addressed by our estimates. 09:56:20 09:56:30 09:56:34 09:56:38 09:56:40

BY MR. BIERSTEKER:

Q. Well, is it or isn't it? 09:56:42

A. It is not. 09:56:42

Q. Now, you did not use BRFSS, B-R-F-S-S, to determine the relationship between smoking and expenditures, right? 09:56:52 09:56:58 09:56:58

A. We could not use -- well, on the full model, we did not use BRFSS for that. 09:57:22 09:57:24

Q. And, likewise, you did not use the claims data to determine the relationship between smoking and 09:57:28 09:57:32

expenditures, right? 09:57:34

A. Well, in the core model, the claims data were used to assist in part of the measurement of the extent of smoking attributable expenditures. 09:58:02 09:58:08 09:58:10

Q. Let's talk about the full model, that's what I was actually referring to. In the full model, you did not use the claims data to determine the relationship between smoking and expenditures, 09:58:12 09:58:14 09:58:16 09:58:18

right? 09:58:22

A. Well, they were used indirectly in measuring the total SAFs obviously because SAFs are applied to those expenditure data. To the extent that there are more expenditures in one category than another, that clearly affects the overall SAF. 09:59:12 09:59:18 09:59:22 09:59:24 09:59:28

Q. I'm not talking about your smoking attributable expenditures or even your SAFs. I'm talking about to determine the relationship between smoking expenditures, all right, now, did you use the claims data in any way to determine the relationship between smoking and expenditures? 09:59:30 09:59:34 09:59:38 09:59:42 09:59:52 09:59:52

A. I don't believe we used that data in the full model to measure the extent of any relationship between smoking and expenditures. 10:00:10 10:00:18 10:00:22

Q. In fact, you didn't use any Minnesota data at all to determine the relationship between smoking and expenditures in the full model, right? 10:00:24 10:00:26 10:00:30

A. I believe there are Minnesota respondents to the 10:00:42

National Medical Expenditure Survey. 10:00:44

Q. You used national data to determine those relationships, right? 10:00:48

A. We certainly used the National Medical Expenditure Survey to measure the extent of those relationships. 10:01:00

Q. And the National Medical Expenditure Survey is a national survey, right? 10:01:08

A. That's correct. 10:01:10

Q. And was not a Minnesota survey, correct? 10:01:14

A. That's correct. 10:01:14

Q. You did use BRFSS, however, to get estimates of the smoking attributable expenditures contained in both your June and your November reports, right? 10:01:28

A. Yes. 10:01:40

Q. And you did rely on imputed or filled in or estimated values in BRFSS to generate your estimates in the smoking attributable expenditures, right? 10:01:50

A. Yes. 10:02:08

Q. And your calculation of the relative error did not take into account uncertainty in the calculation of the smoking attributable expenditures due to your reliance on BRFSS, right? 10:02:32

A. That is correct. 10:02:46

Q. And it didn't take into account uncertainty in your estimates of the smoking attributable expenditures due to reliance upon imputed, estimated or filled in values in BRFSS, right? 10:02:52

A. I believe some of that uncertainty was captured. 10:03:40
Q. How did you do that? In your calculation of the 10:03:50
standard error? 10:03:52

A. Well, we apply averages from NMES to the BRFSS data; 10:04:06
that's the estimation process used to fill in 10:04:14
BRFSS. 10:04:16
Those averages would vary depending on 10:04:20
different possible replications in the national 10:04:22
surveys. To the extent those averages would vary, 10:04:26
we have taken that into account. 10:04:28
Q. If someone in the BRFSS data is missing information 10:06:02
about their educational status, what educational 10:06:08
status did you fill in, estimate or impute for them, 10:06:14
and how did you do it? 10:06:16
A. I don't recall. 10:06:16
Q. Do you recall how you estimated, filled in or 10:06:38
imputed educational status when it was missing in 10:06:44
the NMES data? 10:06:44
A. No. 10:06:50
Q. If you did something like, say, if they're missing 10:06:58
education we'll just assume they're a high school 10:07:00
graduate, okay, that's just the assumption you 10:07:04
made? 10:07:04
A. Are we talking about BRFSS or NMES? 10:07:06
Q. Let's say NMES or BRFSS, it doesn't matter. For 10:07:12
purposes of my question, I don't think it's going to 10:07:14
matter. If you just arbitrarily assigned somebody a 10:07:18

value, are you with me so far? 10:07:24

A. Arbitrarily assigned someone a value. 10:07:28
Q. If it's missing, say, they're a high school graduate. I mean, that's sort of an arbitrary choice, isn't it? 10:07:30 10:07:38 10:07:38
A. Well, it's a choice. 10:07:40
Q. All right. If you made that choice, would the uncertainty in that choice be reflected in your estimate of the standard errors? 10:07:46 10:07:52 10:07:54
A. If we made that choice in BRFSS, I don't believe that uncertainty would be captured. 10:08:06 10:08:08
Q. And if you made that choice in NMES, that uncertainty wouldn't be captured, either, would it? 10:08:10 10:08:14
A. Well, you would capture some of the answer. To the extent that if -- well, hang on a second, I'm sorry, I'm going to have to think about that again for a minute. 10:08:26 10:08:34 10:08:36 10:08:38
The uncertainty related to the effect of having made that choice and how that would cause things to vary from sample to sample, that is captured, but we do not capture uncertainty related to other choices that might have been made. 10:09:36 10:09:38 10:09:40 10:09:46 10:09:48
Q. Very well. Now, we've talked about a number of sources of uncertainty here. And if all of them have been taken into account, wouldn't your estimate of the standard errors be higher? 10:09:56 10:10:10 10:10:16 10:10:20

A. Not necessarily. 10:10:38
Q. Why not? 10:10:40
A. It would depend on the method used to take that uncertainty into account. If that method brought to bear more of the information in the surveys than is currently being used, then standard errors could diminish. 10:10:52 10:10:58 10:11:00 10:11:06 10:11:06
Q. Well, let's assume you keep your same models and your same imputation methods, all right. If you then took into account these additional sources of uncertainty, wouldn't your estimate of standard errors be higher? 10:11:12 10:11:16 10:11:22 10:11:24 10:11:26
MR. LOVE: I object to the form. 10:11:28
THE WITNESS: Well, I am not sure that that could be done in any reasonable way without bringing in additional information. 10:11:48 10:11:50 10:11:52
BY MR. BIERSTEKER:
Q. Is what you're saying is that if you had a different model, standard errors might be different? 10:12:08 10:12:08
A. I'm saying if you applied other methods to estimate missing information, then the standard errors might be different. 10:12:24 10:12:32 10:12:32
Q. Right. And that would be a different model, right? 10:12:38
A. In some respects, yes. 10:12:52
Q. If you took into account the uncertainty, say, for 10:12:56

example, due to your reliance on BRFSS computing smoking attributable expenses, would your estimate of the standard errors be higher or lower? 10:13:00 10:13:04 10:13:06

A. Again, there are several sources of uncertainty in BRFSS. If you address those uncertainties in ways that it made additional use of the information, the standard error could be either higher or lower. 10:13:18 10:13:26 10:13:32 10:13:34

Q. What we're trying to do here is get an estimate of the error, the uncertainty in the model that you, in fact, used, right? 10:13:40 10:13:42 10:13:44

A. That's what the relative errors express, yes. 10:13:52

Q. Okay. And there are sources of uncertainty in your estimates of the smoking attributable expenditures that were not taken into account in your calculation of the relative errors, right? 10:13:56 10:14:00 10:14:04 10:14:10

A. That's correct. 10:14:10

Q. Okay. If you took into account those additional sources of uncertainty, isn't it true that the standard error that you estimate would be higher? 10:14:14 10:14:16 10:14:20

A. Will you ask the question again or have it read back? 10:15:16 10:15:16

MR. BIERSTEKER: Let's have it read back. I don't know that I have it in mind myself anymore. 10:15:18 10:15:20

(The requested portion read back.) 10:15:32

THE WITNESS: Again, I think it depends on how you take those additional sources of uncertainty into account. 10:15:36 10:15:40 10:15:40

BY MR. BIERSTEKER:

Q. What if you jackknifed BRFSS, you included BRFSS in your jackknife, does standard error go up or down? 10:15:50 10:15:54

A. How would you do that? 10:16:00

Q. Well, you're the expert, do you know how you'd do it? 10:16:06 10:16:06

A. I don't know of any straightforward way to do it. 10:16:10

Q. What do you mean by how you take into account those sources, those additional sources of uncertainty? 10:16:20 10:16:22

A. If you used a method that exploited information that's not now being exploited, you're adding information into the process. 10:16:56 10:17:00 10:17:00

Q. But that would be a change in the model, right? 10:17:04

A. Well, it would be changing the overall calculation. 10:17:10

Q. All right. And I don't want to change your model, I want to know the uncertainty associated with your estimates of the smoking attributable expenditures, given the choices that you made and the model that you used. 10:17:16 10:17:18 10:17:22 10:17:24 10:17:24

If I don't change your model and I take into account additional sources of uncertainty that your calculations did not take into account, wouldn't the standard error that I get be even higher? 10:17:28 10:17:30 10:17:34 10:17:38 10:17:38

MR. LOVE: I'll object, it's been asked and answered several times. He's told you he doesn't know how to do that necessarily. 10:17:40 10:17:42 10:17:44

BY MR. BIERSTEKER:

Q. Is that true, you don't know how to do that? 10:17:48
A. Well, I can think of a number of ways that one might consider for addressing uncertainty. Not having done them, I don't know whether they actually -- what the results would actually be. 10:18:18 10:18:24 10:18:26 10:18:30
And it's hard for me to distinguish whether that's a change in the model or not a change in the model. You're adding more information. I don't know how to separate that out. 10:18:32 10:18:40 10:18:50 10:18:52
When you're -- if you address the uncertainty by filling in information in a different way that uses more information, there's a sense in which you're changing the model and there's a sense in which you're not. 10:18:52 10:18:58 10:19:04 10:19:06 10:19:06
Q. Forget about filling in information for now and let's just talk about BRFSS then. If you took into account the uncertainty in your smoking attributable expenditures due to your reliance on the BRFSS Survey, would your estimate of the standard error be higher? 10:19:12 10:19:16 10:19:20 10:19:24 10:19:28 10:19:30

A. There's several sources of uncertainty in the BRFSS Survey. And if those were addressed by using more of the information in the BRFSS Survey, I don't know what happened to the standard error. 10:19:40 10:19:42 10:19:44 10:19:46
Q. I don't want to change the information we're using. All right. BRFSS is a survey, right? 10:19:48 10:19:50
A. Yes. 10:19:52
Q. Reliance on surveys introduces uncertainty, right? 10:19:56

A. I would agree. 10:19:58
Q. That's true whether you take more or less information into consideration than your models actually take into consideration, right? 10:20:00 10:20:02 10:20:04
A. Yes. 10:20:14
Q. Okay. How is it possible that you could take into account additional sources of uncertainty, such as due to your reliance on BRFSS, and end up with more certain estimates? 10:20:16 10:20:20 10:20:24 10:20:24
A. In the ways I've already described. 10:20:30
Q. If you take into account additional information, is that what you're saying? 10:20:36 10:20:38
A. Yes. 10:20:38
Q. All right. Let's say we don't take into account additional information, all we want to take into account is the uncertainty in the information used by your models as they exist now. 10:20:40 10:20:42 10:20:44 10:20:54

Is it possible that you would have more certain estimates if that additional source of uncertainty were taken into account? 10:20:54 10:20:56 10:20:56
MR. LOVE: I'll object. It's been asked and answered, but try it one more time. 10:21:00 10:21:00
THE WITNESS: Could I ask you to read the question, please? 10:22:02 10:22:04
(The requested portion read back.) 10:22:04
THE WITNESS: There is a source of uncertainty in BRFSS related to what might happen if 10:23:00 10:23:10

you repeated the survey that is not taken into account in the current relative errors. 10:23:16 10:23:18

BY MR. BIERSTEKER:

Q. Are you finished? 10:23:24

A. I think so. 10:23:24

Q. If that additional uncertainty were taken into account, then the relative errors would be larger, wouldn't they? 10:23:28 10:23:38 10:23:38

A. If that part of the uncertainty and that part alone were taken into account, then the relative errors would be larger. 10:23:42 10:23:44 10:23:46

Q. And as a general rule, if you don't change the model to take additional information into account, you keep the models just the way they are, the more sources of uncertainty you take into account the 10:23:56 10:24:02 10:24:04 10:24:06

higher the relative errors are going to be, right? 10:24:10

A. Well, there are sources of both certainty and uncertainty, and they're kind of flip sides of the same coin. If you take into account some way consistent findings from other surveys that have been done, then the relative errors could get smaller. 10:24:18 10:24:26 10:24:34 10:24:38 10:24:44 10:24:46

Q. The calculation of a relative error is a mathematical process, isn't it? 10:24:50 10:24:52

A. Yes. 10:24:52

Q. If you take into account additional sources of uncertainty, the mathematical result, the relative error, is going to get bigger, isn't it? 10:24:56 10:25:04 10:25:08

A. Well, I don't really know what to add to what I've previously said. 10:25:34 10:25:34

Q. Well, I don't know that I've really gotten an answer to this question. 10:25:40 10:25:42

MR. LOVE: Yes, you have. He's told you certain ways it can affect it one way or another taking other kinds of things into effect it might go up, he's told you about ten minutes the answer to this question. 10:25:44 10:25:46 10:25:50 10:25:52 10:25:52

MR. BIERSTEKER: I respectfully disagree. And I really would like an answer to the question. 10:25:54 10:25:56

THE WITNESS: Please try it again. 10:26:00

BY MR. BIERSTEKER:

Q. I'll try it again. And that is if you take into account additional sources of uncertainty without changing the way in which you have modeled, isn't it true that your estimate of the relative errors would get larger? 10:26:02 10:26:06 10:26:10 10:26:14 10:26:14

MR. LOVE: I object; it's been asked and answered. 10:26:16 10:26:16

THE WITNESS: My problem is, if you're going to address additional uncertainties, you have to do it in some way. And as soon as you do it in some way, you pick a way and you're changing the way you do things. 10:26:36 10:26:40 10:26:44 10:26:46 10:26:48

So in general, I'm not sure what it means to say we're going to do everything the same way and 10:26:52 10:26:56

yet only address in general sources of uncertainty, and you have to address them in some way. 10:27:04 10:27:06

MR. BIERSTEKER: Let's take a break.

(A break was taken.)

(Mr. Hamlin left the deposition room.) 10:36:28

BY MR. BIERSTEKER:

Q. Doctor, if you take out Exhibit 1292, which is your report, and if you would turn to page 11. 10:37:40 10:37:46

A. Yes. 10:37:54

Q. You say that uncertainty in an estimate can be 10:38:04

summarized in a confidence interval, right, or words to that effect? 10:38:10 10:38:12

A. It's another common way to summarize uncertainty. 10:38:16

Q. And to calculate competence interval, you'd have to choose what is put in quotes here, a confidence level, right? 10:38:20 10:38:24 10:38:24

A. That's correct. 10:38:26

Q. And as you note a couple of sentences later, a level of 95 percent is most common, right? 10:38:32 10:38:36

A. That's correct. 10:38:38

Q. And then you go on to tell us how you can translate the relative errors you report into different confidence intervals, right? 10:38:58 10:39:02 10:39:04

A. Approximate confidence intervals, yes. 10:39:10

Q. What is a confidence interval? 10:39:14

A. It's a range of values which in some situations can be thought of as including a true unknown value with some level of probability. 10:40:06 10:40:12 10:40:14

19	Q.	If you took into account the additional sources of	10:40:42
20		uncertainty that we were talking about before the	10:40:46
21		break, would the confidence intervals on your	10:40:50
22		smoking attributable expenditures here be bigger or	10:40:54
23		wider than they would be if you didn't take that	10:41:00
24		uncertainty into account?	10:41:02
25	A.	We talked about all kinds of things before the	10:41:06

1		break, so I'm not sure exactly what you're referring	10:41:08
2		to.	10:41:08
3	Q.	Well, for example, the uncertainty in BRFSS, if you	10:41:12
4		took that into account, would the confidence levels	10:41:16
5		that you'd compute using relative errors be bigger?	10:41:20
6	A.	Which uncertainty in BRFSS?	10:41:22
7	Q.	The fact that BRFSS is a survey. Come on, Doctor.	10:41:24
8	A.	If you took that and only that into account and	10:41:30
9		calculated confidence intervals using the formulas	10:41:40
10		expressed here, then the intervals would be wider.	10:41:48
11	Q.	Well, could you elaborate on your prior answer where	10:42:32
12		you defined low confidence intervals?	10:42:38
13	A.	Elaborate on it how?	10:42:40
14	Q.	Well, explain it.	10:42:46
15	A.	I don't know what I have to add.	10:42:48
16	Q.	Can you say it any more clearly to a layperson?	10:42:54
17	A.	I don't know that I can give a clearer explanation.	10:43:42
18	Q.	Well, let me ask a couple of questions. You said	10:43:44
19		something about it's a range of values in which, you	10:43:50
20		know, true value might lie, but you said in some	10:43:52

situations, what did you mean by in some situations? 10:43:54 10:43:56

A. Well, a confidence tip interval is typically used to assess information from a single set of data as that set of data has information about some quantity. 10:44:08 10:44:16 10:44:22

There are many situations in which what you know about the quantity you're working with as information both in the sample and in the antecedent information, the doing the study or taking the sample, and so to talk about the true value, you'd need to address both sources of information, whereas the confidence interval really says something only about the sample that you've taken. 10:44:26 10:44:36 10:44:42 10:44:44 10:44:50 10:44:52 10:44:56 10:44:58

Q. Well, what is a confidence interval in connection with your model in this case? 10:45:22 10:45:28

A. I haven't really calculated it. 10:45:34

Q. I know but you told us how to do it or how to do it approximately here at page 11 of your report, right? 10:45:38 10:45:40 10:45:40

A. Yes. 10:45:42

Q. Okay. Well, what is a confidence interval, if you went ahead and calculated it, what is it in this context? 10:45:48 10:45:54 10:45:54

A. I think it has a complicated meaning and that's why I chose to express things or we chose to express things in terms of relative errors relative to confidence intervals. 10:46:04 10:46:08 10:46:12 10:46:12

Q. Is it more or less complicated here than it is in 10:46:16

other contexts? 10:46:18

A. I think it's less straightforward here. 10:46:24

Q. And why is that? 10:46:26

A. First because we're relying not only on the sample, but on assumptions of causation based on Dr. Samet's work. And second because we've excluded certain sources of smoking attributable expenditures. 10:46:46 10:46:54 10:47:04 10:47:08

Q. Well, you've estimated what you've estimated, right? 10:47:34 10:47:34

A. We've calculated measures of smoking attributable expenditures, yes. 10:47:42 10:47:42

Q. And what we want to try to assess, I take it, is uncertainty in those estimates, the ones you actually did, right? 10:47:58 10:48:00 10:48:02

A. Uncertainty in the measures, yes. 10:48:06

Q. Okay. And one of the ways to do that is to calculate a confidence interval, right? 10:48:16 10:48:18

A. Correct. 10:48:22

Q. And the fact that there may be other smoking attributable expenditures that you didn't attempt to measure doesn't really affect the uncertainty of the ones that you did measure, does it? 10:48:30 10:48:32 10:48:38 10:48:40

A. No. 10:48:44

Q. And the fact that you have assumed going in that certain relationships are causal also doesn't affect the measure of uncertainty provided by the confidence interval, does it? 10:49:02 10:49:08 10:49:16 10:49:18

A. It certainly affects interpretations of that measure. 10:49:28 10:49:28
Q. But it wouldn't affect the measure itself, right? 10:49:34
A. Not other than the fact that the measures were chosen to bear some relevance to the original assumption. 10:49:54 10:49:58 10:49:58
Q. So if a confidence interval were calculated here, would it reflect the range of values that could be thought of as containing the true smoking attributable expenditures for the whole population with some level of probability? 10:50:06 10:50:12 10:50:16 10:50:20 10:50:22
A. No. 10:50:24
Q. Why not? 10:50:24
A. First of all, the true levels would reflect some of the sources that we have left out of the calculation. 10:50:36 10:50:38 10:50:52
And second of all, smoking attributable expenditures, as we've defined and addressed them in this study, cannot be zero or negative. 10:51:02 10:51:08 10:51:14
Q. Well, let's talk about the first thing you said. If we wanted to know the true population value of what it is that you have estimated, then the statement is correct, leaving aside for the moment your second issue about whether the SAEs could ever be made? 10:51:56 10:52:00 10:52:04 10:52:08 10:52:12
MR. LOVE: I object to the form, but 10:52:14

answer if you can. 10:52:16

THE WITNESS: Well, I'm going to have to 10:52:18

ask you to ask it again, please. 10:52:20

BY MR. BIERSTEKER:

Q. All right. If we calculated a confidence interval 10:52:24

on your estimates here, would it give us the range 10:52:30

of values that could be thought of as containing the 10:52:34

true but unknown population value for the smoking 10:52:38

attributable expenditures that you did estimate with 10:52:42

some level of probability? 10:52:44

A. Which estimates? 10:52:48

Q. I don't know, nursing home. 10:52:54

A. I think it would tell you how to measure -- the 10:53:26

nursing home that we used is likely to fluctuate 10:53:28

given different surveys. 10:53:44

Q. Okay. Now, does it matter if I picked a different 10:54:04

one, if I said diminished health status, does the 10:54:04

answer differ? 10:54:04

A. Not from the one I just gave, no. 10:54:06

Q. And if I picked the major tobacco related diseases 10:54:08

model, would the answer be different there? 10:54:12

A. I don't believe so. 10:54:14

Q. Okay. Now, you said smoking attributable 10:54:52

expenditures cannot be zero or negative? 10:54:58

A. That's correct. 10:55:00

Q. Why is that? 10:55:04

A. Well, the state or Blue Cross either spent money by logical definition to treatment of these diseases or they didn't. If they didn't, it's zero. If they did, it's positive. 10:55:44 10:55:48 10:55:54 10:55:56

The only way it could be zero is if no person over 20 years in one of the populations covered by Blue Cross or Medicaid ever experienced a tobacco related disease that required some expenditure. 10:56:06 10:56:14 10:56:22 10:56:28 10:56:28

Q. Okay. Well, let's pursue that. In your refined models, you estimate total health care costs attributable to smoking, right? 10:56:42 10:56:54 10:56:56

A. Well, what we're doing is estimating total smoking attributable health care expenditures. 10:57:06 10:57:08

Q. Right. And if you want to know the total smoking attributable health care expenditures, you can't estimate only health care expenditures for lung cancer attributable to smoking, right? 10:57:18 10:57:26 10:57:34 10:57:38

A. I would think that that would only be a part of it. 10:57:46

Q. And the total smoking attributable expenditures could be higher or lower than the smoking attributable expenditures just for treating tobacco related diseases, right? 10:57:52 10:58:04 10:58:10 10:58:12

A. I'm sorry, say that one again. 10:58:16

Q. Sure. The total smoking attributable expenditures for all conditions could be higher or lower than the smoking attributable expenditures incurred just to treat major tobacco related diseases, right? 10:58:20 10:58:24 10:58:30 10:58:32

A. Not all conditions. I'm sorry, I think I missed something there. 10:58:40 10:58:40

Q. Let me ask it again. 10:58:46

A. Please. 10:58:48

Q. Is there a term that you don't understand? 10:58:48

A. No, I just got lost following through the question, and I want to make sure I'm understanding it correctly. 10:58:52 10:58:54 10:58:54

Q. All right. Total smoking attributable expenditures for all medical conditions could be higher or lower than smoking attributable expenditures only for the treatment of major tobacco related diseases, right? 10:59:04 10:59:08 10:59:14 10:59:16

A. I don't see how they could be lower. 10:59:20

Q. Well, smokers might cost less for certain diseases than nonsmokers do, right? 10:59:32 10:59:34

A. Possible. 10:59:36

Q. And if they cost less, there would be negative smoking attributable expenditures for those diseases, right? 10:59:48 10:59:52 10:59:52

A. No, I don't see that. If the disease was incurred as a cause of smoking, it would still cost money to treat that disease. 10:59:58 11:00:02 11:00:04

Q. Well, I understand that. I understand that. But a number of your smoking attributable fractions, in fact, for different age and gender and type of service and other groups are negative, aren't they? 11:00:28 11:00:30 11:00:32 11:00:34

A. That's correct. 11:00:36

Q. And a number of the smoking attributable expenditures for those subgroups are negative, right? 11:00:40 11:00:42 11:00:42

A. That's correct. 11:00:44

Q. Now, that's even true of some of the subgroups among people who are currently being treated for lung cancer and COPD, right? 11:00:54 11:00:58 11:01:00

A. I don't know. 11:01:02

Q. Is it your testimony that all of the smoking attributable expenditures that you estimated with your models that are negative are wrong? 11:01:14 11:01:18 11:01:22

A. Those are part of a measure of smoking attributable expenditures. The measure is -- to be fair, has to take into account that statistical fluctuation would cause average expenditures of -- let me back up a second. 11:01:30 11:01:38 11:01:48 11:01:54 11:01:54

The measure uses the expenditures of related to treatment of nonsmokers to treat them of similar never-smokers in a given year in different 11:02:06 11:02:12 11:02:18

groups as a measure of the extent of which there are true smoking attributable costs. 11:02:20 11:02:22

That measure can go positive or negative. And it would be overstating the estimate of the true costs to simply take the positives. 11:02:30 11:02:34 11:02:38

Q. And, of course, negative smoking attributable expenditures in certain subgroups might not be due to sampling fluctuations at all, right? 11:03:04 11:03:16 11:03:22

A. There are a number of things that could make the 11:03:44

measure negative. 11:03:44

Q. And you haven't tested to find out whether or not it's due to sampling fluctuations or not, right? 11:03:48 11:03:50

A. I'm not sure quite what you mean by that, but I think not. 11:03:56 11:03:58

Q. Well, how would you test that? 11:03:58

A. I'm not sure. 11:04:00

Q. Would you -- 11:04:02

A. As I say, I'm not quite sure what you mean by that. 11:04:04

Q. Would you calculate a confidence interval? 11:04:06

A. I certainly haven't done so. 11:04:08

Q. Do you know if any of your positive estimates of smoking attributable expenditures are due to chance sampling fluctuations? 11:04:14 11:04:22 11:04:24

A. You can never in any of the statistical studies that people commonly rely on absolutely rule out chance 11:05:04 11:05:12

as a possible explanation. 11:05:16

In our groups, the variation in at least two of our groups is such that it's very unlikely that you would see anything like that by chance alone. 11:05:38 11:05:48 11:05:50 11:05:52

Q. In which two groups is it not very unlikely that you would see results due to chance alone of the kind you've got? 11:06:00 11:06:04 11:06:06

MR. LOVE: I object to the form of the question, but you can answer. 11:06:12 11:06:14

BY MR. BIERSTEKER:

Q. Well, you've presented four estimates, right? 11:06:16
A. Correct. 11:06:16
Q. You said two of them were very unlikely to have occurred simply due to chance sampling fluctuations; is that right? 11:06:20 11:06:22 11:06:24
A. I'm not sure those were my exact words. 11:06:26
Q. Well, rephrase it then however you want to describe it. 11:06:28 11:06:28
A. Well, I would characterize it as in those two groups it would be quite unlikely for the measure to have been what it was simply by chance. 11:07:16 11:07:32 11:07:34
Q. And you can't say the same thing about the other two groups, right? 11:07:42 11:07:42
A. I wouldn't characterize them as very unlikely. 11:07:48

They're less -- or excuse me. 11:08:06
There is a higher likelihood in the other two groups that the measure could have been as high as it was simply due to chance. 11:08:12 11:08:16 11:08:18
Q. Do you know whether or not it's more probable than not? Well, first of all, what are those other two groups? 11:08:36 11:08:40 11:08:42
A. The nursing homes and the diminished health mixed effects. 11:08:48 11:08:48
Q. Do you know whether it's more likely than not that you got the results you did for nursing homes due to chance sampling fluctuations? 11:08:50 11:08:56 11:08:58
A. It is more likely that they were not due to chance fluctuations. 11:09:06 11:09:06

15	Q.	And what did you do to determine that?	11:09:14
16	A.	Applied the law of likelihood.	11:09:22
17	Q.	Well, walk me through it. How did you do that?	11:09:26
18	A.	The likelihood function, approximate likelihood	11:09:32
19		function, is much higher at our estimate than it is	11:09:38
20		at zero.	11:09:38
21	Q.	The approximate likelihood function is higher at	11:09:44
22		your estimate than it is at zero, is that what you	11:09:46
23		said?	11:09:48
24	A.	Correct.	11:09:48
25	Q.	Are you talking about zero point estimate compared	11:09:54

1		to the point estimate you got; is that what you're	11:09:58
2		comparing?	11:09:58
3	A.	That's correct.	11:10:00
4	Q.	Do you know how likely it is that the point estimate	11:10:06
5		is right in nursing homes?	11:10:08
6	A.	I don't think statistics can be used to tell you	11:10:26
7		what's right in general, and I don't think that's a	11:10:34
8		meaningful question.	11:10:34
9	Q.	Well, then what likelihood were you computing when	11:10:42
10		you said that the maximum likelihood estimate or	11:10:46
11		whatever it was was greater for your point estimate	11:10:48
12		than it was just for zero alone?	11:10:52
13	A.	It is more likely -- I'm saying a couple of things.	11:11:30
14		The estimate that we came up with, the measure of	11:11:36
15		smoking attributable medical costs, is the one most	11:11:42
16		consistent with the data.	11:11:44

Q. Are you finished? 11:11:54
A. That's -- 11:11:58
Q. You are? 11:11:58
A. Yes. 11:12:00
Q. I don't know how that responds to my question. I asked you -- you said you did, you compared the maximum likelihood something for the point estimate to the maximum likelihood something for zero, right? I'm asking you likelihood of what? 11:12:04 11:12:08 11:12:12 11:12:16 11:12:20

A. Likelihood of seeing the results we actually saw. 11:12:26
Q. Isn't it true that the confidence interval for the nursing home level includes zero and negative numbers at the 50 percent level? 11:12:56 11:13:06 11:13:08
A. I haven't done that calculation. 11:13:20
Q. Have you seen that calculation anywhere? 11:13:22
A. I noted some reference to it in some of your affidavits and whatnot. 11:13:28 11:13:30
Q. Okay. Did you read Brian McCall's report, supplemental report, of January? 11:13:34 11:13:38
A. Yes. 11:13:38
Q. Did you see them there? 11:13:40
A. I believe that's one of the places. 11:13:42
Q. Let's assume that Dr. McCall's calculation is right, okay, and that's, in fact, the case. 11:13:48 11:13:50
Doesn't that mean there's only a 50 percent chance that this unknown true population value is even in the confidence interval, first? 11:13:58 11:14:02 11:14:06
A. No. 11:14:08

20 Q. It doesn't mean that? Why not? 11:14:12
21 A. Because we have antecedent information that's not 11:14:20
22 being reflected in that calculation. 11:14:22
23 Q. Is there any epidemiology that establishes a causal 11:14:38
24 relationship between smoking and nursing home 11:14:42
25 usage? 11:14:48

1 A. I believe that there are causal, and my 11:14:54
2 understanding is there are causal relationships 11:14:56
3 between smoking and diseases that would lead to 11:15:08
4 nursing home usage. 11:15:08
5 Q. Doctor, my question was: Is there any information 11:15:20
6 that establishes a causal relationship between 11:15:22
7 smoking and nursing home usage? 11:15:26
8 MR. LOVE: I'll object; asked and 11:15:28
9 answered. 11:15:30
10 MR. BIERSTEKER: For the record, his prior 11:15:40
11 answer was an articulation of belief. 11:15:42
12 THE WITNESS: I don't know of any. 11:16:54
13 BY MR. BIERSTEKER:
14 Q. So, now, let's look at this estimate. And if what 11:17:16
15 Dr. McCall has calculated is right, at the 50 11:17:24
16 percent confidence level your study would not 11:17:40
17 support an assumption that smoking health causes 11:17:50
18 increased nursing home usage, would it? 11:17:56
19 A. Using a statistical model to establish that cause, 11:18:02
20 it is consistent with that assumption. 11:18:06
21 Q. It doesn't establish a causal relationship, does 11:18:12

it? 11:18:14

A. No. 11:18:14

Q. And, in fact, assuming Dr. McCall is right, the 50 percent confidence interval would include this 11:18:34 11:18:38

unknown true population value half of the time, right? 11:18:44 11:18:44

A. It's hard to make that statement when you know something about that true population value in addition to what you're getting from the measure that's being calculated. 11:18:50 11:18:52 11:18:56 11:18:58

Q. And what is it that you know? 11:19:00

A. First of all, you know by definition that the smoking attributable expenditures for nursing home costs cannot be negative. 11:19:04 11:19:08 11:19:10

Q. I really don't understand that. I'm sorry, were you finished with your answer? 11:19:14 11:19:14

A. Yes. 11:19:16

Q. Was that it? 11:19:16

A. That's correct. 11:19:18

Q. Okay. Smoking attributable expenditures aren't estimates -- smoking attributable expenditures are estimates of the association between smoking and in this instance nursing home expenditures, correct? 11:19:28 11:19:36 11:19:38 11:19:42

A. Did you say measures of the association? 11:19:44

Q. Yes. 11:19:46

A. Yes. 11:19:46

Q. And you've taken pains to say that you rely on Dr. Samet for causation, right? 11:19:52 11:19:54

25 A. That's correct. 11:19:54

1 Q. And it is the association that you are estimating 11:20:24
2 with your models, you're quantifying the degree of 11:20:28
3 that association, right? 11:20:28
4 A. That's correct. 11:20:30
5 Q. And that association could be positive or it could 11:20:34
6 be negative, couldn't it? 11:20:36
7 A. The association in the data could be positive, it 11:20:40
8 could be negative. 11:20:42
9 Q. The association in the population could be positive 11:20:44
10 or it could be negative, couldn't it? 11:20:46
11 A. Yes. 11:21:04
12 Q. And if that's the case, smoking attributable 11:21:22
13 expenditures could be negative, right? 11:21:26
14 A. I would disagree with that. 11:21:28
15 Q. Well, why not? You're quantifying -- aren't you 11:21:32
16 merely quantifying the association between smoking, 11:21:34
17 and in this example we're talking about nursing home 11:21:38
18 expenditures, right? 11:21:38
19 A. As a measure. 11:21:40
20 Q. As a measure. Okay. And a measure of the 11:21:44
21 association, you're quantifying that association, 11:21:48
22 right? 11:21:48
23 A. That's correct. 11:21:48
24 Q. Okay. And we've already talked about the 11:21:52
25 association could be negative or positive, so why 11:21:56

can't the measure of the association be negative? 11:22:02

A. I'm sorry, I thought we've said that the measure could be negative. To be clear, we're saying that the true value of smoking attributable expenditures could not be negative. 11:22:06 11:22:12 11:22:14 11:22:16

Q. Wait a minute. Wait a minute. I just don't understand that. Explain that to me. Why is that? 11:22:18 11:22:20

A. By the basic assumptions of which we undertake our investigation. If there is one person over the 20-year period who gets a disease caused by smoking, and as a result of that disease enters a nursing home, then the smoking attributable expenditures are positive. 11:22:34 11:22:44 11:22:50 11:22:54 11:22:56 11:22:56

Q. For that person, right? 11:22:58

A. In total. 11:23:00

Q. In total. They're going to be positive no matter what? 11:23:04 11:23:04

A. Absolutely. 11:23:06

Q. And if every other -- if every nonsmoker entered the nursing home and no other smoker did, you would still say that there are smoking attributable expenditures that are positive; is that right? 11:23:18 11:23:22 11:23:26 11:23:28

A. I would if that smoker entered the nursing home because of a disease caused by smoking. 11:23:32 11:23:34

Q. Well, is that -- but you've just estimated the 11:23:38

association between smoking and total expenditures for health care, right? 11:23:48 11:23:50

A. That's our measure. 11:23:50

Q. That's your measure. And that measure could be negative, right? 11:23:58 11:23:58

A. Yes. 11:24:00

Q. And the true population value of smoking attributable expenditures, as you have defined it with your models, could also be negative, couldn't it? 11:24:16 11:24:24 11:24:34 11:24:34

MR. LOVE: I object to the form. 11:24:36

THE WITNESS: I'm sorry, please ask it again. 11:24:40 11:24:42

BY MR. BIERSTEKER:

Q. Let's stick with nursing homes. If the true association of the population between smoking and nursing home usage were negative, the true population value of smoking attributable expenditures, as you would calculate them the way you did in your models, would be negative, right? 11:25:34 11:25:36 11:25:48 11:25:58 11:26:04 11:26:06

A. No. 11:26:08

Q. Why not? 11:26:10

A. That's why I characterize what we calculate in our models as a measure. It's an imperfect measure. 11:26:14 11:26:18

Q. You seem to want to use, though, an entirely different measure when we start talking about populations? 11:26:28 11:26:30 11:26:30

A. I don't believe so. 11:26:34
Q. You seem to want to talk about expenditures caused by smoking, not associated, when you start talking about population values? 11:26:38 11:26:42 11:26:44
A. That's ultimately what we're trying to measure the extent of. 11:26:48 11:26:48
Q. But if you measure expenditures associated with smoking, which is all that your models purport to do, right? 11:26:54 11:26:58 11:26:58
A. Well, they measure the association of expenditures for smoking the different disease pathways. 11:27:26 11:27:32
Q. I understand that you do it for different groups of people, really, right? 11:27:36 11:27:36
A. That's correct. 11:27:36
Q. Okay. But in the end what you're estimating by different methods for different groups of people is the association between smoking and health care expenditures, including nursing homes, right? 11:27:42 11:27:46 11:27:48 11:27:56
A. That's what we measure, yes. 11:27:58
Q. Okay. And the true population value of that measurement could very well be negative, right? 11:28:04 11:28:08
A. The only estimate that I have is that it's positive. Is it theoretically possible that that 11:28:16 11:28:18

measure if calculated on the whole population could be negative? The answer is yes to that. 11:28:22 11:28:24
Q. Now, coming back to something you said earlier when we were talking about negative smoking attributable expenditures estimated by your model for certain 11:28:56 11:29:00 11:29:02

groups of people. 11:29:04

You said that that was part of a measure 11:29:10

of the total smoking attributable expenditures, or 11:29:14

something to that effect, do you remember that? 11:29:16

A. That's correct. 11:29:16

Q. Likewise, the health care expenditures associated 11:29:36

with smoking to treat a smoking-related disease are 11:29:44

also only part of the total smoking attributable 11:29:48

expenditures, right? 11:29:50

A. I'm sorry, can you ask me that again? 11:29:52

Q. Read it back, please. 11:29:54

(The requested portion read back.) 11:29:54

MR. LOVE: I object to the form of the 11:30:14

question.

THE WITNESS: I don't understand that 11:30:16

question. 11:30:16

BY MR. BIERSTEKER:

Q. You don't understand that question? What don't you 11:30:18

understand? 11:30:18

A. If I knew what I didn't understand, I could answer 11:30:22

the question. 11:30:22

Q. It would help me to rephrase it if you could tell me 11:30:28

what causes the difficulty? 11:30:28

A. Well, could you try rephrasing it? 11:30:30

Q. Since I have no clue where the stumbling block is, 11:30:34

it's a little hard to do that, but let me try it 11:30:36

this way. 11:30:38

Smokers may have higher costs to treat diseases that doctors have and the Surgeon General and other people have said are caused by smoking, right? 11:30:46 11:30:52 11:30:54 11:30:56

A. They may. 11:30:58

Q. Okay. But that would only be part of the total estimate of smoking attributable expenditures, right? 11:31:06 11:31:10 11:31:10

A. That's correct. 11:31:10

Q. And just because Dr. Samet and others say that smoking causes lung cancer, for example, doesn't mean that the total smoking attributable expenditures, as you have defined it, are going to be positive, doesn't it? 11:31:36 11:31:44 11:31:52 11:32:08 11:32:08

A. I believe that's the only implication that can be drawn from that. To make sure I'm answering the right question, that they will be positive. 11:32:14 11:32:22 11:32:24

Q. I'm sorry, I'm going to have to look at your answer, I was not paying attention. What is the right question? 11:32:34 11:32:46 11:32:48

A. Are you asking me? Well -- 11:33:00

Q. Well, I don't think this is difficult, so let's try it one more time. Although, I may not be expressing it very well. Let me start again. 11:33:02 11:33:06 11:33:08

A. I may have fumbled my understanding. 11:33:12

Q. Smoking attributable expenditures are a measure of the association between smoking, as we discussed, and health care expenditures, right? 11:33:20 11:33:24 11:33:28

A. The extent of which expenditures treat smokers in our model differ from those of other similarly situated never-smokers in the same year is a measure of the true smoking attributable health care expenditures. 11:33:52 11:34:02 11:34:06 11:34:12 11:34:12

Q. And smokers when you make that comparison might have higher medical expenditures than nonsmokers for reasons that have absolutely nothing to do with their smoking, right? 11:34:32 11:34:36 11:34:38 11:34:40

A. That is possible. 11:34:42

Q. And so you're not saying that your estimate or even the true population value of smoking attributable expenditures is the same thing as expenditures caused by smoking, right? 11:34:52 11:34:54 11:35:04 11:35:06

MR. LOVE: I object to the form. 11:35:10

THE WITNESS: I'll repeat again what I said. What I said is what I said. It is what it is, and it's not what it's not. 11:35:18 11:35:22 11:35:24

BY MR. BIERSTEKER:

Q. I'm sorry, this is hard stuff, and I'm doing my best. Let me take it one step at a time. 11:35:28 11:35:30

Smoking attributable expenditures is not the same thing as expenditures for health care caused by smoking, right? 11:35:32 11:35:36 11:35:38

A. Smoking attributable expenditures are expenditures for treating smoking related health conditions. 11:35:54 11:36:04

Q. That's not what you estimated, is it? 11:36:10

A. It certainly is what we've measured. 11:36:14
Q. I thought you estimated total health care 11:36:20
expenditures for smokers and nonsmokers for all 11:36:24
conditions and all diseases, right? 11:36:28
A. Because we have focused on diseases known to be 11:36:42
caused by smoking and controlled for other factors 11:36:46
normally controlled for in this kind of study, while 11:36:54
no one can ever construct a perfect measure of true 11:36:58
smoking attributable expenditures, what we have 11:37:02
constructed is a reasonable measure of smoking 11:37:04
attributable expenditures. 11:37:06
Q. Doctor, that really doesn't answer my question and I 11:37:12
move to strike the answer. 11:37:12

You have estimated smoking attributable 11:37:16
expenditures for all medical conditions, yes or no? 11:37:20
A. We have estimated a measure of smoking attributable 11:37:30
expenditures for smoking-caused conditions. 11:37:36
Q. So there are no medical expenditures for cirrhosis 11:37:50
of the liver in your estimates? 11:37:52
A. Based on the antecedent research and studies of 11:38:24
smoking and smoking-related diseases, there is no 11:38:36
reason to believe that expenditures of that sort in 11:38:44
any material way affect the measure of smoking 11:38:48
attributable expenditures that we've calculated. 11:38:50
Q. That doesn't answer my question, Doctor. Doctor, 11:38:54
you included expenditures for everything in the pots 11:38:56
of money to which you apply the smoking attributable 11:39:00
fractions, right? 11:39:00

16 A. That is correct. 11:39:00
17 Q. To compute the smoking attributable fractions, you 11:39:04
18 estimated the total health care expenditures of 11:39:06
19 smokers and nonsmokers and took the difference, 11:39:08
20 right? 11:39:08
21 A. No, that's not correct. 11:39:10
22 Q. You didn't take the total health care expenditures 11:39:12
23 of smokers and nonsmokers and calculate the 11:39:16
24 difference? 11:39:16
25 A. We looked at an estimate of what the smoker 11:39:22

1 expenditures would be if they resembled similar 11:39:30
2 nonsmokers. 11:39:34
3 Q. Okay. But you basically took the difference between 11:39:36
4 smokers expenditures and what you expect their 11:39:38
5 expenditures to be if they didn't smoke, right, 11:39:42
6 control them for whatever you controlled for? 11:39:42
7 MR. LOVE: I object to the form. 11:39:44
8 THE WITNESS: Well, what we did was 11:40:08
9 compare expenditures of smokers to those of similar 11:40:22
10 never-smokers. 11:40:22
11 BY MR. BIERSTEKER:
12 Q. And you did that for all health care costs, not just 11:40:28
13 for health care costs incurred to treat 11:40:30
14 smoking-related diseases, right? 11:40:32
15 A. That calculation was applied to all health care 11:40:46
16 costs. 11:40:46
17 Q. Thank you. 11:40:46

MR. LOVE: Can we take a quick break, Peter? 11:40:50

MR. BIERSTEKER: Yes. 11:40:54

(A break was taken.) 11:40:56

BY MR. BIERSTEKER:

Q. Let's come back to nursing homes for a minute. If you had gotten a $10 estimate of smoking attributable expenditures for nursing homes instead 11:44:58 11:45:04 11:45:08

of $259 million, would that result also be consistent with your assumption that smoking leads to increased nursing home usage? 11:45:14 11:45:18 11:45:26

A. Certainly be nothing inconsistent about it. 11:45:32

Q. Is your $259 million estimate, given the high relative errors of that estimate, consistent with an assumption that your assumption is wrong, smokers don't have higher nursing home usage? 11:45:46 11:45:54 11:45:58 11:46:06

MR. LOVE: I object to the form. 11:46:08

BY MR. BIERSTEKER:

Q. Let me rephrase the question. Is your $259 million estimate consistent with an assumption that smokers do not have greater nursing home usage than nonsmokers? 11:46:16 11:46:26 11:46:32 11:46:32

A. I think the assumption, as I've stated it, that we started with, that the true smoking attributable expenditures for nursing homes had to do with smokers entering nursing homes because of a smoking-caused condition. 11:46:48 11:46:50 11:46:54 11:47:04 11:47:10

I believe the assumption was that over 20 11:47:16

years there would be at least one such person. 11:47:20

Q. Let's come back because I'm troubled, and I think that the definition of smoking attributable expenditure seems to change depending upon what we're talking about. 11:47:38 11:47:42 11:47:46 11:47:46

So let me ask you this question: What is a smoking attributable expenditure? 11:47:48 11:47:52

A. A smoking attributable expenditure is an expenditure of dollars to treat a condition or disease caused by smoking. 11:48:02 11:48:08 11:48:08

Q. So is a smoking attributable expenditure -- let me ask you this: There are no smoking attributable expenditures, then, for diseases that are not caused by smoking, right? 11:49:12 11:49:16 11:49:20 11:49:22

A. What we were trying to estimate in this population, estimate the extent of in this population, are dollars expended to treat conditions or diseases caused by smoking. 11:49:42 11:49:48 11:49:52 11:49:54

Q. I'm really not sure how that answers the question, so let me ask it again. 11:50:06 11:50:06

There could be no smoking attributable expenditures for diseases that are not caused by smoking, right? 11:50:10 11:50:16 11:50:18

A. I don't think that's correct. 11:51:10

Q. Well, how can that be? 11:51:14

A. If a smoking caused condition or disease made it more difficult to treat or prolong the treatment of 11:51:32 11:51:36

another condition, I would call those part of smoking attributable expenditures. 11:51:40 11:51:44

Q. Okay. So smoking attributable expenditures, then, 11:51:46

are not expenditures of money to treat diseases caused by smoking, it's broader than that? 11:51:52 11:52:02

A. Well, I think this is somewhat of a matter of definition. It is broader than that if in the sense that extra money is expended to treat the medical consequences of the smoking-caused diseases. 11:52:36 11:52:42 11:52:50 11:52:54

Q. So if a smoker doesn't have a smoking-caused disease, is it possible for him to have any smoking attributable expenditures? 11:53:02 11:53:06 11:53:08

A. In the actual population for which we're trying to establish a quantitative measure, I do not think it is possible for a smoker without a smoking-caused disease or condition to have smoking attributable medical expenditures. 11:54:14 11:54:22 11:54:30 11:54:36 11:54:38

Q. What do you mean by condition, is that some kind of physical problem, is that what you mean? 11:54:48 11:54:50

A. Well, physical problem is probably a fair word. To clarify, as one example, in diminished health there could be a variety of conditions, such as a cough, for example, or respiratory problems which might not technically be called the disease but would be an adverse health condition. 11:55:10 11:55:20 11:55:24 11:55:30 11:55:34 11:55:36

Q. But in making your estimates, you did something different, right? 11:56:36 11:56:38

MR. LOVE: Object to the form, but answer 11:56:48

the question if you can. 11:56:48

THE WITNESS: I don't know what you mean 11:56:56

by did something different. I just defined for you 11:57:00

a condition. 11:57:00

BY MR. BIERSTEKER:

Q. I understand that. But we've now defined smoking 11:57:06

attributable expenditures in the true compilation? 11:57:10

A. Yes. 11:57:12

Q. You used a different definition, didn't you, when 11:57:14

you actually made your estimates? 11:57:16

A. We defined a measure which would be a reasonable 11:57:24

measure of the extent of which conditions that I've 11:57:34

defined caused smoking attributable medical 11:57:38

expenditures in Minnesota populations. 11:57:42

Q. Let me ask the question as straightforward as I know 11:57:44

how. Is the definition of smoking attributable 11:57:48

expenditures that you used in making your estimates 11:57:50

different than the definition you've just given me 11:57:52

for the population? 11:57:54

A. There is a measure, which is one thing, and there is 11:58:04

a thing which we're trying to measure, which is the 11:58:06

other. The definition of smoking attributable 11:58:12

expenditures doesn't change. 11:58:16

Q. Let's pick an example. In the second reduction, how 11:59:16

much extra disease reduction, you compare the rate 11:59:22

of current treatment for the major tobacco related diseases among smokers to the rate of current treatment among nonsmokers who are in the same group whatever, the definition changes depending upon which disease you're talking about, right? 11:59:30 11:59:36 11:59:44 11:59:48 11:59:50

A. Yes. 11:59:52

Q. And you attribute the extra cases of diseases among the smokers to their having ever smoked, right? 11:59:58 12:00:02

A. That's correct. 12:00:06

Q. That's not the same thing as the number of cases of those diseases that would have been avoided if nobody had ever smoked, right? 12:00:14 12:00:16 12:00:18

A. Well, it's not the same thing. 12:00:34

Q. And you can't say that the extra cases of diseases that you have identified, even in your sample among smokers, were caused by their smoking, can you? 12:00:42 12:00:48 12:00:54

A. That's the basic assumption on which we calculate these measures is that those diseases are caused by smoking. 12:01:02 12:01:06 12:01:08

Q. Well, is there -- there's a difference between assuming that smoking causes a particular kind of disease? 12:01:14 12:01:20 12:01:20

A. Yes. 12:01:22

Q. And an assumption that smoking caused a certain number of those diseases, isn't there? 12:01:30 12:01:34

A. There's a difference, yes. 12:01:36

2	Q.	And you're making an assumption about the number of	12:01:44
3		cases of extra disease caused by smoking, right?	12:01:50
4	A.	Well, making a calculation of an estimate of that.	12:01:54
5	Q.	Making a calculation, and you're assuming for	12:01:58
6		purposes of your calculation, that all of those	12:02:02
7		extra cases of disease were, in fact, caused by	12:02:04
8		smoking, right?	12:02:06
9	A.	We're assuming that that calculation represents a	12:02:10
10		reasonable estimate of the number of extra diseases	12:02:14
11		caused by smoking.	12:02:14
12	Q.	No, no, I'm just talking about the sample now. I'm	12:02:18
13		not talking about the population.	12:02:18
14		In the sample, you are assuming that all	12:02:22
15		of the extra cases of those diseases in the people	12:02:26
16		in the sample were caused by their smoking, right?	12:02:32
17	A.	No. In the sample, we're assuming that it's a	12:02:34
18		reasonable estimate of the number of extra cases	12:02:38
19		caused by smoking.	12:02:38
20	Q.	And where does that assumption come from?	12:03:08
21	A.	Standard methods of epidemiology and statistics.	12:03:16
22	Q.	And can standard methods of epidemiology statistics,	12:03:26
23		such as significance testing, be used to evaluate	12:03:34
24		the accuracy of that assumption?	12:03:42
25	A.	I think standard methods, such as standard	12:04:30

1		statistical methods, can be used to evaluate the	12:04:38
2		precision of the estimate of how many extra cases	12:04:42
3		there are.	12:04:42

Q. It can also be used to evaluate whether or not at a given level of confidence you can reject the null hypothesis that there aren't any, right? 12:04:52 12:04:58 12:05:00

A. I don't have such a null hypothesis. 12:05:06

Q. Well, the assumption as to the reasonableness of your estimate of the number of extra cases of disease caused by smoking, even among people in your sample, did not come from Dr. Samet, I take it? 12:05:12 12:05:14 12:05:16 12:05:22

A. I'm sorry, say that one again. 12:05:24

MR. BIERSTEKER: Have the question read back. 12:05:26 12:05:26

(The requested portion read out back.) 12:05:26

THE WITNESS: We used standard epidemiologic methods to make that estimate with which I know he's familiar with those methods. 12:05:52 12:05:56 12:05:58

BY MR. BIERSTEKER:

Q. Your assumption is based on statistical and epidemiological methods, right? 12:06:12 12:06:14

A. The assumption that our calculation of the additional cases among the smokers is a reasonable estimate if the extra cases caused by smoking is grounded in statistical and epidemiologic methods. 12:06:36 12:06:46 12:06:56 12:06:56

Q. And those are statistical and epidemiologic methods that you employed in your model in this case, right? 12:07:02 12:07:02 12:07:02

A. That is correct. 12:07:02

Q. They are not statistical -- it is not the result of the application of statistical and epidemiological 12:07:08 12:07:10

methods that you saw reported elsewhere that forms the basis of the assumption made here? 12:07:14 12:07:16

MR. LOVE: I object to the form. 12:07:20

THE WITNESS: What assumption are we talking about at this point? 12:07:30 12:07:32

BY MR. BIERSTEKER:

Q. Well, let me ask maybe a different question. Given the assumption that smoking causes some kinds of diseases -- which is what you've assumed from Dr. Samet, right? 12:07:50 12:07:54 12:07:58 12:08:00

A. That's correct. 12:08:00

Q. Given that assumption, do you have an expert opinion that the extra cases of diseases identified by your model were caused by smoking? 12:08:04 12:08:10 12:08:14

A. It is a reasonable estimate of the number of extra cases caused by smoking. 12:08:34 12:08:36

Q. And it's your expert opinion that that's a reasonable estimate of the number of the extra cases of disease caused by smoking, right? 12:08:44 12:08:48 12:08:50

A. Yes. 12:08:56

Q. And that expert opinion is based upon your model here, right? 12:08:58 12:09:00

A. Among other things. 12:09:06

Q. Well, what are the other things? 12:09:08

A. Well, the reason that it's a reasonable estimate comes from epidemiologic and statistical theory. And the reasonableness of it, I guess, does come 12:09:10 12:09:14 12:09:18

also from the application of these techniques and other situations to estimate similar quantities. 12:09:22 12:09:26

Q. In the third reduction, the how many extra dollars reduction, you compare average medical expenditures, at least in the core model, of a person without a major tobacco related disease to the average expenditure of a person with a major tobacco related disease, right? 12:10:00 12:10:04 12:10:08 12:10:10 12:10:14 12:10:14

A. That's correct. 12:10:16

Q. And you attribute that difference to having the major tobacco related disease, right? 12:10:22 12:10:24

A. That's correct. 12:10:26

Q. That's not the same thing as identified in the expenditures made to treat the major tobacco related disease, is it? 12:10:28 12:10:32 12:10:34

A. It's a reasonable estimate of the expenditures made, again given similar groups and whatnot, for treating 12:11:24 12:11:30

tobacco related diseases and their medical consequences as we defined earlier. I believe that's correct. 12:11:36 12:11:46 12:11:46

Q. Really. Let's suppose you and I are the same age. And assume I smoke and I have heart disease. And you don't smoke. You take the difference in our medical expenditures. 12:12:32 12:12:42 12:12:50 12:12:54

Is that a reasonable estimate of the health care expenditures I incur to treat heart disease caused by my smoking? 12:13:02 12:13:16 12:13:20

A. This model isn't about you or about me, it's a 12:13:26

statistical model. It's talking about averages over large numbers of people. 12:13:30 12:13:30

Q. But could you answer the question. Would it be for just the two of us a reasonable estimate in the hypothetical I gave? 12:13:34 12:13:38 12:13:38

A. I don't know how -- I'm not nor would I make any attempt to make estimates for individuals. 12:13:48 12:13:50

Q. Well, let's say you did the same calculation, only this time we had ten people. Is that a reasonable estimate? Not of the difference in the health care costs between smokers and nonsmokers, but of the health care costs incurred by smokers to treat diseases they got because they smoked. 12:13:56 12:14:02 12:14:08 12:14:10 12:14:12 12:14:14

A. I haven't looked at 10 people. 12:14:22

Q. What if you looked at 100 people? 12:14:24

A. I think in the populations that we looked at, as they existed, that the estimate that we calculated was a reasonable one. 12:14:30 12:14:34 12:14:36

Q. So the model estimates the number of extra diseases caused by smoking, right? 12:15:06 12:15:08

A. That's correct. 12:15:10

Q. And you think it estimates the dollars spent to treat only diseases or medical conditions caused by smoking, right? 12:15:16 12:15:22 12:15:26

A. I believe it provides reasonable estimates of those things, yes. 12:15:34 12:15:36

Q. And you assume that everything that's associated 12:15:38

with smoking, controlling for whatever you control 12:15:40
for, use different groups, is caused by smoking, 12:15:44
right? 12:15:44
A. No, I don't assume that. 12:15:48
Q. Well, don't you -- 12:15:52
A. I'm assuming that these are reasonable estimates 12:15:56
because of control for many factors in a full model, 12:16:00
and these factors are fully consistent with other 12:16:04
studies in the literature and what's controlled for 12:16:06
there and what has been found to be a significant 12:16:14
and important factor in making these kinds of 12:16:20
calculations. 12:16:22

Q. Look, all I'm trying to say is that you calculate, 12:16:36
what you calculate is the difference in health care 12:16:44
costs associated with smoking after controlling for 12:17:00
certain factors, right? 12:17:04
A. That is what we calculate. 12:17:10
Q. And then you assume that that quantity was incurred, 12:17:30
number one, to treat smoking-related diseases, 12:17:34
right? 12:17:34
A. I assume that it was a reasonable estimate of that 12:17:40
quantity. 12:17:40
Q. And you assume it's a reasonable estimate of that 12:17:44
quantity, even though it includes expenditures to 12:17:50
treat all diseases, right? 12:17:52
A. It's applied to expenditures to treat all diseases. 12:18:00
Q. Right, that's how you calculate. And that's how you 12:18:04
calculate, too, it's not just applied. 12:18:04

When you calculate the difference in the health care expenditures between smokers and nonsmokers, you use their medical expenditures on everything, right? 12:18:06 12:18:08 12:18:10 12:18:12

A. That's correct. 12:18:12

Q. Did you make any attempt to calculate the association between smoking and only those health care expenditures incurred to treat smoking-related diseases? 12:18:36 12:18:44 12:18:50

A. We certainly attempted to estimate that in the way I just described. 12:18:56 12:18:58

Q. Doctor, I'm really not trying to make this be hard, okay. I mean, I really don't think you're answering my questions. Let me try it one more time. 12:19:02 12:19:06 12:19:10

MR. LOVE: I'll object to the editorial comment. He is trying very hard to answer your questions. 12:19:12 12:19:14 12:19:14

BY MR. BIERSTEKER:

Q. You estimated the association between smoking and total health care expenditures, right, and other factors? 12:19:26 12:19:30 12:19:30

A. Yes, and other factors, including things like major smoking attributable disease. 12:19:42 12:19:44

Q. And you didn't estimate the association, you didn't calculate the association between smoking and only those expenditures that were incurred to treat diseases that the Surgeon General and others have 12:20:04 12:20:10 12:20:12 12:20:16

said could be caused by smoking, right? 12:20:22
A. The only way I know to estimate such a quantity is 12:20:28
exactly the way we did it. 12:20:30
Q. Doctor, if you knew how much the State of Minnesota, 12:20:36
say, for example, in Medicaid, had spent to treat 12:20:38
heart conditions, right, let's say you just knew 12:20:44
that number, you knew what it was, you could have 12:20:52

estimated the extent to which smokers incurred 12:20:56
higher expenditures for heart disease than 12:21:00
nonsmokers did, right? 12:21:02
A. Well, that's a hypothetical that I don't know how 12:21:06
that would come about. And if that came about, then 12:21:10
it would be a different situation for anything I've 12:21:12
addressed. 12:21:12
And so I wouldn't want to speculate as to 12:21:14
how I would go about doing something in that 12:21:18
situation. 12:21:20
Q. If that was your end point, what you really wanted 12:21:22
to estimate was the amount of money spent to treat 12:21:26
diseases caused by smoking, wouldn't you want to 12:21:32
limit the pot of money used in estimating your model 12:21:34
to those conditions? 12:21:36
MR. LOVE: I object to the question, and I 12:21:44
think -- I don't see any connection between that and 12:21:46
the supplemental report at this point in time. 12:21:48
Unless you can show me that there is one, 12:21:52
I'm going to instruct Dr. Wyant not to answer the 12:21:54
question. It just has nothing to do with the 12:21:58

supplemental report. 12:21:58

MR. BIERSTEKER: It has everything to do 12:22:00

with it. It has everything to do with whether this 12:22:02

is a causal model and what significance levels are 12:22:04

going to be applied to it, and you know that. You 12:22:08

guys filed a brief on this, for goodness sakes. 12:22:10

MR. LOVE: That was a response. The 12:22:12

question about how we calculated the expenditures is 12:22:14

set forth in the original report. You've had two 12:22:16

days of deposition about how they calculate that. 12:22:18

MR. BIERSTEKER: I have done more than I 12:22:20

have to do to connect it to the supplemental 12:22:22

report. 12:22:22

MR. LOVE: I don't believe so. 12:22:24

MR. BIERSTEKER: Fine. 12:22:26

BY MR. BIERSTEKER:

Q. Doctor, would you answer the question, please. 12:22:28

THE WITNESS: I'm sorry, you'll have to 12:22:30

repeat it.

MR. LOVE: It has nothing to do with the 12:22:32

supplemental report.

MR. BIERSTEKER: Are you instructing him 12:22:32

not to answer? 12:22:32

MR. LOVE: Yes. 12:22:36

MR. BIERSTEKER: Certify the question. 12:22:38

(Question certified.) 12:22:40

THE WITNESS: Are you about to launch into 12:22:54

24 another line here? 12:22:56
25 MR. BIERSTEKER: This might be a good 12:22:58

1 place to break for lunch, why don't we do that. 12:23:00
2 (A lunch break was taken.) 13:19:40
3 BY MR. BIERSTEKER:
4 Q. Doctor, turn to page 6 of 1292, your supplemental 13:19:54
5 report in there. 13:19:54
6 You talk about ways to interpret relative 13:19:58
7 errors. And you say, quote, "In simple terms one 13:20:02
8 can think of them as expressing the range within 13:20:04
9 which, more likely than not, our expenditure 13:20:08
10 estimates would lie if the NMES and NHANES surveys 13:20:10
11 were repeated, using all the same methods, but with 13:20:14
12 a different random samples of respondents." Do you 13:20:22
13 see that? 13:20:22
14 A. Yes. 13:20:22
15 Q. So for your major smoking-related diseases total, 13:20:26
16 which is about $558 million -- 13:20:28
17 A. Uh-hm. 13:20:30
18 Q. -- the estimate would lie within plus or minus 41.2 13:20:46
19 percent of that $558 million about 2/3 of the time 13:21:02
20 if the NMES sample were repeated, right? 13:21:06
21 A. That's correct. 13:21:06
22 Q. And the diminished health pure self-reported poor 13:21:18
23 health pathway you identify as the second item on 13:21:20
24 that chart on the top of the page, the estimate 13:21:22
25 there is about $476 million, right? 13:21:26

A. That's correct. 13:21:28
Q. And if the NMES sample were taken again, 2/3 of the time you think your estimate would be within plus or minus 41.9 percent of that $476 million figure, right? 13:21:36 13:21:38 13:21:44 13:21:44
A. If we applied all the exact same calculations. 13:21:48
Q. And for the diminished health mixed effects pathway, your estimate is about $476 million? 13:22:00 13:22:02
A. Correct. 13:22:04
Q. And if the NMES survey were redone, the estimate you'd expect to get would be within plus or minus 154 percent of that $476 million 2/3 of the time, correct? 13:22:14 13:22:18 13:22:26 13:22:26
A. That's correct. 13:22:26
Q. And for the nursing home usage number your estimate is about $260 million, right? 13:22:32 13:22:36
A. Correct. 13:22:36
Q. And if the NHANES survey were repeated, 2/3 of the time your estimate would be within plus or minus 175 percent, roughly, of that $260 million figure, right? 13:22:42 13:22:48 13:22:52 13:22:52
A. Yeah, we applied the same calculations. 13:22:56
Q. You said you'd read Dr. McCall's report. 13:23:30
MR. BIERSTEKER: Would you mark this.
(Defendants' Exhibit 1293 marked for 13:24:26

identification by the reporter.)

BY MR. BIERSTEKER:

Q. Doctor, that's a copy of Dr. McCall's report. And I wanted you to turn to Table 5 in the report, if you could. 13:24:30 13:24:34 13:24:34

MR. LOVE: That's McCall's supplemental report? 13:24:42 13:24:42

MR. BIERSTEKER: Yeah, it should be supplemental report. 13:24:46 13:24:46

BY MR. BIERSTEKER:

Q. Now, your total damage estimate for all your models and for all the groups of people is in row 9 on that report, it's the $1.77 billion, do you see that? 13:25:04 13:25:08 13:25:12

A. Uh-hm. 13:25:12

Q. And what Dr. McCall has done in this table is present different jackknife confidence intervals for different models and groups of models and people? 13:25:20 13:25:24 13:25:28

A. Um-hm. 13:25:30

Q. Using your Table 2.SAS program. Do you have any reason to believe that these calculations weren't done correctly? 13:25:36 13:25:40 13:25:42

A. Just the -- I don't have any reason to believe that simple arithmetic calculations were done incorrectly here, no. 13:25:46 13:25:52 13:25:52

Q. Let's just assume they were done correctly for 13:25:54

purposes of the examination, all right? 13:25:56

A. Yes. 13:25:56

3	Q.	The arithmetic. Now, at the -- do you see the --	13:26:10
4		let me start over.	13:26:12
5		Do you see that there are different	13:26:12
6		results presented for different confidence	13:26:14
7		intervals, correct?	13:26:16
8	A.	Yes.	13:26:16
9	Q.	And the 95 percent confidence interval is one of the	13:26:26
10		intervals for which results are shown, right?	13:26:28
11	A.	That's correct.	13:26:28
12	Q.	Okay. And using that 95 percent confidence	13:26:40
13		interval, the lower limit is shown as going	13:26:44
14		negative, right?	13:26:44
15	A.	Well, his method of doing things.	13:26:52
16	Q.	Right, which we've assumed for purposes of this	13:26:54
17		examination you did the math correctly, right?	13:26:56
18	A.	I'll assume that the math is correct.	13:26:58
19	Q.	Okay. And it goes negative, right?	13:27:00
20	A.	That's correct.	13:27:02
21	Q.	Now, doesn't that mean that at the 95 percent	13:27:18
22		confidence interval, the $1.77 billion estimate is	13:27:32
23		not statistically different from zero?	13:27:38
24	A.	No, it absolutely doesn't mean that.	13:27:42
25	Q.	Why not?	13:27:42

1	A.	First of all, I would not agree that this is a	13:27:48
2		useful or appropriate calculation to combine	13:27:52
3		interval estimates over all four groups.	13:28:00
4	Q.	Any other reason?	13:28:08

A. Well, the other reason, another reason, and this is just to ensure the wording of it, this relates only to our measure and not, say, to the actual smoking attributable expenditures, for which we know there's other information besides this measure, at least that is our assumption. 13:28:36 13:28:44 13:28:54 13:28:58 13:29:00 13:29:06

Q. All right. Let's -- I'm sorry, were you finished? I asked for any other reason. I'd like to get all of them. I thought you were done. Are you finished? 13:29:10 13:29:12 13:29:14 13:29:16

A. Thirdly, I think to be careful with the statistical language, even absent those other issues, I would want to be careful in any situation like this where if there was a reason to do significance testing, the phrase you used is interpreted in statistics as meaning you can't rule out chance as a possible explanation, at whatever level we're talking about. 13:29:20 13:29:30 13:29:32 13:29:40 13:29:50 13:29:54 13:30:00

And I guess my final issue with this is that it presumes that it's meaningful to do this kind of significance testing here, where we're involved in an estimation process and simply trying 13:30:12 13:30:20 13:30:26 13:30:30

to provide a best estimate. 13:30:34

And I do believe we've related such an estimate of the smoking attributable expenditures and assign information about its reliability. 13:30:38 13:30:44 13:30:50

Q. Well, people do, statisticians do, statistical significance testing for estimates all the time, don't they? 13:31:12 13:31:26 13:31:28

A. They do it frequently. 13:31:30
Q. And why is it not meaningful to apply those methods 13:31:34
to your estimates here? 13:31:38
A. I think any estimates in statistics are 13:31:46
fundamentally based on the assumptions that are made 13:31:50
going in to setting up the experiment or the 13:31:56
calculation of the study. 13:32:00
In most instances, in my experience, where 13:32:06
significance tests are used, it is to convey 13:32:10
information about one sample as if it were the only 13:32:16
sample ever taken on the issue. 13:32:20
That is not the case here. There have 13:32:24
been many, many studies related to this subject. 13:32:26
And based on Dr. Samet's input and those studies, we 13:32:36
start out with a base assumption of causation. 13:32:48
And the implication of that assumption is 13:32:48
that true smoking attributable expenditures cannot 13:32:50
be zero. And on that basis, I do not think it would 13:32:54

really be appropriate or meaningful to do a 13:32:58
significance test in this situation. 13:33:00
Q. Well, when you do a statistical significance test, 13:33:18
you assess variability due to sampling, right? 13:33:30
A. That's part of what goes into a significance test, 13:33:38
sure. 13:33:38
Q. Well, significance testing assumes that the 13:33:52
specification of the model is right, doesn't it? 13:33:56
A. Usually. 13:34:02

10	Q.	And you assume that the specification of your models	13:34:12
11		were right when you calculated the relative errors,	13:34:16
12		didn't you?	13:34:18
13	A.	Yes. The word "right" is a funny term. We don't	13:34:30
14		pretend to be God. The reasonable models reflect in	13:34:36
15		a reasonable way our various disciplines.	13:34:38
16	Q.	But you assume that the specification -- maybe	13:34:40
17		another word would be "valid," would that be fair?	13:34:44
18	A.	Valid.	13:34:44
19	Q.	Okay. And so the calculation assumes the validity	13:35:06
20		of the kinds of assumptions that you made in	13:35:14
21		building your model, right?	13:35:16
22	A.	That's correct.	13:35:16
23	Q.	And with a different model you might get a different	13:35:48
24		estimate of smoking attributable expenditures,	13:35:52
25		right?	13:35:52

1	A.	Yes.	13:35:52
2	Q.	And there's no other -- well, and your model here	13:36:16
3		was made for this litigation, right?	13:36:18
4	A.	That's correct.	13:36:20
5	Q.	Okay. There are no other published results -- well,	13:36:30
6		let me -- estimates have nowhere else been made	13:36:38
7		using your model, right?	13:36:40
8	A.	Not to my knowledge.	13:36:40
9	Q.	So if we wanted to test, would you agree that it	13:37:00
10		would be meaningful to test the statistical	13:37:04
11		significance of your estimates using this model and	13:37:20
12		assuming that all of your assumptions are valid?	13:37:22

A. No, I wouldn't agree. 13:37:26
Q. And now I would like to come back and ask you why? 13:37:30
A. Because one of the fundamental assumptions has to do with smoking causing these diseases and conditions we've talked about. 13:37:36 13:37:42 13:37:44
And in line with that, our basic definition of what the true smoking attributable expenditures are assumes, based on that, that they must be positive. 13:37:52 13:37:56 13:38:08 13:38:08
Therefore, since that is one of the fundamental assumptions on which this operates, those assumptions again being derived from Dr. Samet in his work, since you know under these assumptions 13:38:10 13:38:14 13:38:18 13:38:22

that it can't be zero, there is no reason to do a significance test. 13:38:24 13:38:26
Q. Is there any reason then to calculate relative errors? 13:38:46 13:38:46
A. I think so. 13:38:48
Q. And I know we touched on this earlier, but why? 13:38:54
A. Because what we're calculating are measures of the extent of which there are something attributable, dollars. 13:39:06 13:39:10 13:39:12
These measures are not perfect and there is some uncertainty associated with it, and it is reasonable to summarize, to the extent one can, the various sources of uncertainty and certainty. 13:39:14 13:39:20 13:39:28 13:40:14
Q. Would it be -- let me see if I can express that 13:40:20

another way, and you tell me if I've got the gist of it. 13:40:22 13:40:24

In other words, statistical significance testing talks about whether or not you can reject the null hypothesis, right? 13:40:28 13:40:34 13:40:36

A. That's part of the lingo. 13:40:38

Q. Okay. And the null hypothesis that Dr. McCall is testing is that the smoking attributable expenditures you've estimated might not be different than zero, right? 13:40:50 13:40:54 13:40:58 13:41:00

A. Is that a quote from somewhere here? 13:41:10

Q. It's not a quote, no, not a quote. Do you disagree or don't know or what? 13:41:14 13:41:16

A. Well, what was your question? 13:41:18

Q. Isn't that what the null hypothesis would be in this context, that the estimate of smoking attributable expenditures is not different than zero or is zero? 13:41:22 13:41:24 13:41:28

A. Would be, what do you mean by would be? 13:41:30

Q. Let me ask you this way: If the null hypothesis were something else, how does the fact that you assume that there are positive smoking attributable expenditures make the statistical significance testing not meaningful? 13:41:36 13:41:42 13:41:44 13:41:46 13:41:48

A. I'm sorry? 13:41:50

MR. LOVE: Object to the form. 13:41:50

BY MR. BIERSTEKER:

Q. Maybe let me approach it another way. You believe you've got reasonable estimates of smoking 13:42:12 13:42:18

attributable expenditures, given the assumptions that you may start with, right? 13:42:22 13:42:24

A. That's correct. 13:42:26

Q. If one cannot reject the hypothesis, based on the statistics alone, that smoking attributable expenditures are zero -- you with me so far? 13:42:50 13:42:56 13:42:58

A. I think so. 13:43:00

Q. Okay. Doesn't that suggest something to you about 13:43:10

either the reasonableness of your estimates or the reasonableness of your assumptions? 13:43:14 13:43:16

A. No. 13:43:24

Q. And, again, why not? 13:43:34

A. I think the assumptions are reasonable. I think the estimates are reasonable. What I think it suggests to me is that it's not very meaningful to think about significance testing in this context. 13:43:34 13:43:38 13:43:38 13:43:44

And before you ask another question, if you'll excuse me, I need to take a brief break. 13:43:48 13:43:52

MR. BIERSTEKER: Sure. 13:43:54

(A break was taken.)

BY MR. BIERSTEKER:

Q. Do you know what the null hypothesis was that Dr. McCall was examining in his report? 13:47:50 13:47:54

A. Can you point me to a place here or -- 13:47:58

Q. You've read it, do you know what it was? 13:48:00

A. No, I wouldn't want to characterize that without refreshing my memory. 13:48:04 13:48:04

Q. If you had to construct a null hypothesis for your models, what would it be? 13:48:10 13:48:12

A. I wouldn't construct a null hypothesis for these models. I think the kinds of things that in other situations you addressed for that, the rest of the assumptions derive from Dr. Samet. 13:48:20 13:48:24 13:48:28 13:48:32

The questions would have to be, similar kind of analysis would have to be done on the basis of his conclusions. 13:48:34 13:48:38 13:48:38

Q. Well, statistical significance testing could provide an indication of the uncertainty in your estimates by telling you whether or not those estimates, given all your assumptions and assuming they're correct, is really different than zero, right? 13:49:44 13:49:46 13:49:50 13:49:52 13:50:00

A. The estimates are really different from zero, they're all positive. 13:50:06 13:50:08

Q. Do you know whether or not they're statistically different than zero? 13:50:10 13:50:12

A. So what's the question? 13:50:18

Q. Let me put it another way. Statistical significance testing can give you a way to measure the uncertainty in your estimates, right? 13:50:22 13:50:30 13:50:32

A. (No response.) 13:51:20

Q. Doctor, if it would help you, turn to footnote 6 of your report. You say to summarize uncertainty in terms of confidence and putting it another common way to summarize uncertainty is via confidence intervals. 13:51:24 13:51:28 13:51:30 13:51:34 13:51:34

A. Yes, I also said earlier I didn't think it was a good way to summarize uncertainty in this situation. 13:51:38 13:51:42 13:51:42

Q. But it is a way to do it? 13:51:46
A. It is a way. 13:51:46
Q. And if we do that, for many of your estimates we find that at least at the 95 percent level you cannot rule out chance as having given rise to the results you got, right? 13:52:34 13:52:40 13:52:48 13:52:50
A. Well, let me be careful and ask about what estimate we're talking about here. 13:53:20 13:53:20
Q. The estimates that you've generated. 13:53:26
A. These individual estimates on page 6? 13:53:30
Q. Look, we can talk about any of these individual estimates you want. I mean, we can talk about the specific results for specific ones if you wish, but -- 13:53:36 13:53:40 13:53:44 13:53:44
A. I want to be clear for the question we're focusing on. 13:53:48 13:53:50
Q. If we, for example, apply the traditional 95 percent confidence level to your diminished health mixed estimate, we cannot reject with 95 percent confidence the hypothesis that your results were obtained due to chance? 13:54:12 13:54:26 13:54:34 13:54:44 13:54:46
A. I would characterize the 95 percent level as a traditional level, not the traditional level. If you applied the confidence interval formula to that 13:54:52 13:55:02 13:55:04

estimate, at the 95 percent level of confidence you could not rule out chance as one possible explanation or one possible reason for this result. 13:55:06 13:55:08 13:55:24

Q. And, in fact, we can't rule out chance as a reason for your diminished health mixed result at the 80 percent confidence level, either, right? 13:55:34 13:55:40 13:55:44

A. Is that math in here somewhere? 13:55:52

Q. Yes, take a look. 13:55:54

A. Bear with me a moment. We're talking 80 percent diminished health mixed? 13:56:24 13:56:26

Q. Uh-hm. 13:56:28

A. Again, using the 80 percent level, you can't rule out chance as one possible reason for the particular measure we're talking about here, that is diminished health effects being $476 million. 13:56:52 13:57:02 13:57:06 13:57:08

Q. And, in fact, there would be a 20 percent probability at the 80 percent confidence level that the results were due to chance; is that right? 13:57:24 13:57:28 13:57:38

A. You can't characterize it that way. 13:57:40

Q. All right. And also your diminished health mixed results -- let me start that question over. 13:57:48 13:57:58

You cannot reject the possibility that your diminished health mixed estimate was due to chance even with 50 percent confidence, right? 13:58:02 13:58:06 13:58:16

MR. LOVE: Object to the form of the question, but you can answer. 13:58:20 13:58:20

THE WITNESS: Well, again, if you apply to this measure a 50 percent confidence level, you cannot rule out and, again, I'm assuming, of course, the validity of this math, you cannot rule out chance as one possible reason for getting an estimate that's good. 13:58:34 13:58:44 13:58:50 13:58:54 13:59:02 13:59:14

BY MR. BIERSTEKER:

Q. And I don't know that we need to go through each individual number, but that is also true of the nursing home estimate at the 95, 80 and 50 percent levels, right? 13:59:18 13:59:20 13:59:26 13:59:28

A. I believe that's correct, yes. 13:59:38

Q. Now, I'm a little puzzled. You say that this kind of statistical significance testing may not be, in your view, meaningful, right? 14:00:12 14:00:20 14:00:22

A. Yes. 14:00:26

Q. Do the other publications in the literature do statistical significance testing? 14:00:34 14:00:38

A. There are publications that do significance testing. 14:00:40 14:00:40

Q. And with regard to smoking and health? 14:00:44

A. Yes. 14:00:46

Q. And with regard to smoking and health care costs? 14:00:48

A. Yes. 14:00:54

Q. And, in fact, one of the articles you cite in 14:01:02

footnote 6 on page 11 of your report is an article from the journal called "Inquire"? 14:01:06 14:01:10

A. Yes. 14:01:14

Q. And they did statistical significance testing in that article for smoking and health care costs, didn't they? 14:01:18 14:01:22 14:01:22

A. Yes, they did. 14:01:22

Q. In fact, they argue for the use of, where they suggest the use of a 90 percent one-sided test of significance in that article, right? 14:01:34 14:01:38 14:01:42

A. Well, that's one that they've used. 14:01:46

Q. They also used 95, didn't they? 14:01:50

A. I believe so, yes. 14:01:52

Q. Can you identify a single article in the literature regarding smoking and health that did not employ statistical significance tests? 14:02:08 14:02:20 14:02:20

A. The Milliman & Robertson actuarial study of Control Data Corporation employees I don't believe did. I'm going, of course, on memory here. I don't believe Dr. Manning's study did. 14:02:54 14:02:58 14:03:02 14:03:04

Now, there may have been a test employed somewhere in some of his work, but to my recollection I don't believe that he calculated anything in terms of the kinds of totals that would be analogous to what we estimate here. 14:03:16 14:03:20 14:03:24 14:03:28 14:03:34

Q. I'm sorry, say that again? 14:03:34

A. The kinds of totals that would be analogous to what we estimate here. 14:03:38 14:03:40

4		And, I'm sorry, would you mind repeating	14:03:50
5		the question again?	14:03:52
6	Q.	I had actually intended to ask you two questions.	14:03:54
7		You seem to be kind of going --	14:03:58
8		My first question was: Can you think of a	14:04:02
9		single article in the peer reviewed published	14:04:04
10		literature that does not use statistical	14:04:08
11		significance testing when it's discussing the	14:04:10
12		relationship between smoking and disease?	14:04:12
13	A.	Yes.	14:04:14
14	Q.	And then could you identify those for me?	14:04:16
15	A.	I believe the one I have in mind was cited in our	14:04:20
16		first report.	14:04:22
17	Q.	And do you recall what that was?	14:04:24
18	A.	It was a JAMA article. You've got the footnotes	14:04:30
19		here. I can look it up for you.	14:04:32
20	Q.	I probably do. All right. So is that the only	14:04:36
21		article that you can think of?	14:04:36
22	A.	Oh, heavens, smoking and disease in the peer	14:04:54
23		reviewed literature. That's the one that comes to	14:05:14
24		mind off the top of my head, but I do believe that	14:05:18
25		there are others.	14:05:20

1	Q.	Okay. And now let me ask you a parallel question.	14:05:26
2		Can you identify a single article in the peer	14:05:30
3		reviewed published literature concerning smoking and	14:05:34
4		health care costs that did not employ statistical	14:05:38
5		significance testing?	14:05:38

6	A.	Well, I'm not sure off the top of my head. One	14:06:28
7		thing I would check are the articles excerpted from	14:06:36
8		Manning's study, at least with respect to the kinds	14:06:40
9		of costs we're talking about here.	14:06:42
10	Q.	Anything else?	14:06:48
11	A.	Health care costs -- I believe there have been	14:07:34
12		studies in MMWR from Centers for Disease Control.	14:07:40
13	Q.	Are you speaking about the publication by Dr. Miller	14:07:46
14		and others?	14:07:48
15	A.	That's one.	14:07:50
16	Q.	Okay.	14:07:50
17	A.	I believe there were preceding --	14:07:54
18	Q.	I'm sorry, go ahead.	14:07:56
19	A.	I believe they were preceding MMWR articles, also.	14:08:00
20	Q.	The Dr. Miller you're referring to is the same	14:08:04
21		Dr. Miller who was an author, joint author, with you	14:08:08
22		and Dr. Zeger with the reports in this case, right?	14:08:14
23	A.	That's correct.	14:08:16
24	Q.	Were Leigh, et al, in the "Inquire" article engaged	14:08:30
25		in a meaningless exercise when they calculated	14:08:34

1		confidence intervals?	14:08:36
2	A.	I wouldn't characterize it that way.	14:08:42
3	Q.	Why are they any different than what Dr. McCall was	14:08:48
4		doing here?	14:08:56
5	A.	I don't believe they've defined smoking attributable	14:09:02
6		expenditures for a group in precisely the same way	14:09:08
7		we have, and with a precisely specified attribution	14:09:14
8		of that assumption.	14:09:16

Q. What do you mean by precisely specified attribution of that assumption? 14:09:50 14:09:52

A. By that I was referring to -- I was referring to a combination of things in that article. 14:09:58 14:10:00

To the best of my recollection, I don't believe they defined smoking attributable costs as I have or used that phrase. And I don't think that they specifically rely on epidemiologist for the causation. 14:10:04 14:10:08 14:10:14 14:10:18 14:10:18

Q. So is it your testimony that if you assume causation, based upon what another expert tells you, that then statistical significance testing is not meaningful? 14:10:34 14:10:42 14:10:50 14:10:50

A. I don't think it is meaningful if you take as a starting point an assertion of causation, as we do with Dr. Samet, and where the stated goal is to provide a measure of the extent to which dollars -- 14:11:08 14:11:14 14:11:22 14:11:28

of the extent to which there are smoking attributable expenditures in the population in the ways that we've defined and discussed them here. 14:11:30 14:11:36 14:11:42

Q. If the calculation of confidence intervals in this context was not meaningful, why do you spend so much time in your report not only discussing confidence intervals but particular confidence levels? 14:11:58 14:12:04 14:12:08 14:12:10

A. They are a way of expressing ranges in which our measures would fall, given repeated samples, if used and interpreted in that way. I don't think they're 14:12:30 14:12:38 14:12:44

quite as clear in presentation as relative errors, but it's a reasonable substitute. 14:12:48 14:12:50

Q. Okay. So it's a meaningful way, then, to assess uncertainty in your estimates? 14:12:56 14:13:00

A. In the measures and the uncertainty as I've said here due to reliance on certain surveys. 14:13:08 14:13:10

Q. Assuming everything else is valid about the model and the way it's done, it's just the reliance on the surveys? 14:13:16 14:13:20 14:13:20

A. Yes. 14:13:22

Q. When the confidence interval is -- confidence level, excuse me, is 50 percent and the interval includes 0 and goes negative, isn't it true that there is a greater than 50 percent chance that you got the result you did due to sampling fluctuations? 14:15:06 14:15:10 14:15:46 14:15:50 14:15:54

A. No. 14:16:00

Q. Why not? 14:16:00

A. It's simply incorrect. 14:16:04

Q. Why is it incorrect? 14:16:06

A. I don't know of any mathematical calculation you could make that would justify that. 14:16:10 14:16:10

Q. At the 95 percent level, confidence level, if the confidence interval includes the value 0, the negative numbers, isn't it true that there is a greater than 5 percent probability that you got the result you did due to sampling fluctuations? 14:16:28 14:16:32 14:16:36 14:16:38 14:16:42

A. No. 14:16:58

Q. Is there a greater than 5 percent probability of 14:17:16

something at the 95 percent level if the interval includes 0 and goes negative? 14:17:22 14:17:28

MR. LOVE: Object to the question. If you can answer it, go ahead. 14:17:30 14:17:32

THE WITNESS: Good heavens. 14:17:34

BY MR. BIERSTEKER:

Q. Then I'm going to ask you what the something is. 14:17:36

A. I'm going to have to ask you to ask that question again just to make sure I've got that one in my mind. 14:17:42 14:17:44 14:18:04

Q. Sure. At the 95 percent confidence level, if the interval includes 0 and goes negative, there's a 14:18:10 14:18:16

more than 5 out of 100 chance that the null hypothesis, that you could have gotten the result that you did even if the null hypothesis were true, right? 14:18:32 14:18:38 14:18:40 14:18:42

A. Well, A, that's not true. And, B, just for the record here, let me renew my contention that the notion of a null hypothesis -- 14:20:14 14:20:18 14:20:24

Q. I understand, I just want to understand how the statistics work. You said it wasn't true. Let me take another stab at it. 14:20:26 14:20:30 14:20:32

A. Okay. 14:20:32

Q. If you test at the 95 percent confidence level and the confidence interval includes 0 and negative numbers, isn't it true that you would be -- isn't it true that the probability of rejecting the null 14:20:42 14:20:44 14:21:10 14:21:14

hypothesis and being wrong is greater than 5 percent? 14:21:18

A. Pardon me for the delay here. The only problem here is I'm doing these things in my head, and being careful at this time of day takes some effort. 14:22:24

Q. Think how I feel. 14:22:42

A. I don't think the way you phrased that is correct. 14:25:18

Q. Well, I hesitate to ask this, but I'm going to: How did I get that wrong? 14:26:02

MR. LOVE: I object to the question. It calls for the witness to speculate as to what you're trying to get at. 14:26:06

MR. BIERSTEKER: I think he knows. 14:26:08

MR. LOVE: I don't know that you know. 14:26:12

MR. BIERSTEKER: I do. 14:26:14

THE WITNESS: Okay. So what's the question now? I just want to be sure. 14:26:14

BY MR. BIERSTEKER: 14:26:38

Q. If you do a 95 percent confidence level test and the interval includes 0 and negative numbers, isn't it true that there's more than a 5 percent chance of something, and I want to know what that something is? 14:26:40

MR. LOVE: Same objection. 14:26:44

THE WITNESS: Well, in a situation where one sees hypothesis tests in a normal kind of scenario, and, again, I'm not agreeing that I think this is meaningful or applicable here, if a 95 14:26:48 14:26:54 14:26:56 14:26:58 14:26:58 14:27:28 14:27:38 14:27:42 14:27:46

percent confidence interval is covering 0, then there is a greater than 5 percent chance of observing what you observed or greater. 14:27:52 14:27:58 14:28:04

Well, I'm assuming what you observe is positive. That probability exceeds 5 percent. Well, actually it exceeds two and a-half percent, I believe. 14:28:06 14:28:12 14:28:16

BY MR. BIERSTEKER:

Q. Okay. Do you know of any epidemiological literature that says there is a relationship between smoking and what you call in your report diminished health mixed? 14:28:44 14:28:54 14:29:00 14:29:04

A. Yes. 14:29:10

Q. Is that something that you discussed with Dr. Samet? 14:29:16 14:29:18

A. Yes. 14:29:18

Q. And is he the source of your information concerning literature about the relationship between smoking and diminished health mixed? 14:29:22 14:29:24 14:29:28

A. He is a source. 14:29:30

Q. Okay. Apart from whatever Dr. Samet may have advised you, what literature says that there's a relationship between smoking and diminished health mixed that you know of? 14:29:36 14:29:42 14:29:44 14:29:46

A. Well, part of diminished health mixed, at least part of it, is the same in concept as diminished health poor reported health status. 14:29:56 14:30:02 14:30:04

The reason being a limitation of the NMES survey in that they only asked reported health status at one point in the first half of the year. And there is epidemiologic literature on the use of self-reported poor health status. I

think I've cited three or four here in the supplemental report.

Q. Well, but wait a minute, the effect of self-reported health status is in the diminished health pure, right?

A. The self-reported poor health status is used as a measure. And what was self-reported in the NMES survey is and what is what we call self-reported pure.

What I'm suggesting is that had NMES asked the self-reported poor health question again later in the year, in all likelihood they would have picked up some changed answers. However, we can't pick that up because they didn't ask the question.

Q. Okay. Let me see if we can explore this general point a little bit.

Now, smokers in the diminished health model are smokers who have never had or don't have during an entire year current treatment for major tobacco related disease, right?

A. That's correct.

Q. And they reported their health status in, what, February of 1987, the year the survey was done,

something like that? 14:31:58

A. I think it's a little after that. 14:32:00

Q. A little after that. Do you remember when it was? 14:32:02

A. I think like April. 14:32:06

Q. Okay. Now, do you have any basis for believing that the self-reported health status of smokers who in the entire year never got a major tobacco related disease would have changed in a way that was different than the self-reported health status of never-smokers during the course of the year? 14:32:20 14:32:22 14:32:26 14:32:30 14:32:38 14:32:40

A. In the literature and as we found in NMES, there is a positive relationship between smoking and diminished health. 14:33:10 14:33:24 14:33:26

Q. Yet you've already got that relationship as of March or whatever it was, right? 14:33:38 14:33:40

A. Correct. 14:33:42

Q. Okay. And since you've already got that relationship, what makes you think that for the remainder of the year the health status of the smokers who didn't get a major tobacco related disease in the entire year is going to change in a more deleterious way than the health status of the never-smokers? 14:33:54 14:33:58 14:34:04 14:34:06 14:34:10 14:34:14 14:34:14

A. Smoking is generally found if you correlate it with diminished health if conditions arise in the latter half of the year such that for certain people in NMES their health status diminishes, I would expect 14:35:58 14:36:04 14:36:12 14:36:16

that to happen more often for smokers than never-smokers or to some greater extent because of that correlation. 14:36:18 14:36:22 14:36:24

Q. You assume that? 14:36:26

A. I'm assuming that. 14:36:28

Q. You could have periodically examined that in NMES, right? 14:36:32 14:36:32

A. I don't know how. 14:36:32

Q. You could look at current treatment for other than major tobacco related diseases for nonsmokers and never-smokers after whatever date it was they reported their self-reported health status, right? 14:36:36 14:36:38 14:36:40 14:36:42

A. Well, the whole point of using self-reported health status is as an effective and widely used measure of general poor health that encompasses a variety of conditions and diseases. So you don't have anything equivalent to that later in the year. 14:36:48 14:36:56 14:37:02 14:37:04 14:37:06

Q. But, again, the self-reported health status effect is wholly subsumed within the pure health pathway, right? 14:37:12 14:37:18 14:37:18

A. What was actually self-reported, yes. 14:37:22

Q. Okay. I had a -- if you turn to page 8 of your report, there was an example given there about cancer in remission, but I'm not real sure I followed. That starts on the bottom of 7, but the 14:37:26 14:37:30 14:37:32 14:37:36

top of 8 is where the substance is. 14:37:40

It says, "If smokers are more likely to 14:37:44

have cancers in remission, it may be that they have 14:37:46

higher costs for precautionary tests than 14:37:50

never-smokers. Such costs may not be reflected in 14:37:52

self-reported health status assessments, so they 14:37:56

fall into the mixed effects pathway." 14:38:00

Do you see that? 14:38:00

A. Yes. 14:38:00

Q. Now, are you saying that self-reported health status 14:38:16

doesn't capture cancer in remission? 14:38:20

A. I'm saying it may not. 14:38:24

Q. In other words, you're saying a person with cancer 14:38:28

in remission will report the same health status that 14:38:32

he or she would have if they hadn't had cancer at 14:38:36

all? 14:38:36

A. No, I'm not saying that. 14:38:40

Q. Well, what are you saying then? 14:38:44

A. I'm saying that one possible component of mixed 14:38:58

effects is some people who are having follow-up work 14:39:02

for previous disease but are not currently 14:39:10

experiencing any effects of that disease, report 14:39:14

themselves in good or excellent health. 14:39:16

Q. Well, in better health than they would have if they 14:39:20

had never had the disease at all or in the same 14:39:22

health? Let me go back. 14:39:24

A person with cancer in remission might report themselves in good health, right? 14:39:38 14:39:42

A. Yes. 14:39:42

Q. Okay. But I still don't understand, for this reason, don't you have to be saying that a person with cancer in remission may report the same health status as they would have reported if they'd never had cancer at all? 14:39:52 14:39:58 14:40:06 14:40:12 14:40:12

A. There certainly may be people who would be reporting the same health status as if they hadn't had cancer, yes. 14:40:32 14:40:36 14:40:36

Q. And is that -- that seems to me to be the only way in which the example you give makes sense. 14:40:40 14:40:42

A. They could be reporting better health status than before. I think the issue here is not so much what they were before and after, but are there people in the population for which we're making estimates who are at the same self-reported health status, but if there is a differential probability of previous disease, then some of those people with the same health status would be more likely to experience expenditures such as this. 14:41:02 14:41:04 14:41:12 14:41:18 14:41:26 14:41:28 14:41:34 14:41:36 14:41:38

Q. So are you suggesting, then, that smokers may systematically say they are in better health than 14:41:48 14:42:04

nonsmokers with the same set of medical conditions? 14:42:06

A. That could be true or it could not be true, I don't know, but that's not what I'm saying here. 14:42:14 14:42:16

Q. Well, one of the things that changed between your 14:42:26

June report and your November supplemental report was the emergence of diminished health status pure and diminished health status mixed? 14:42:28 14:42:34 14:42:38

A. Correct, at least in terms of the reports. 14:42:40

Q. In June diminished health status was just reported as a single estimate, right? 14:42:44 14:42:46

A. That's correct. 14:42:46

Q. And in November it's broken up into mixed and pure, right? 14:42:54 14:42:54

A. That's correct. 14:42:54

Q. Why did you do that? 14:42:58

A. In part that was in response -- a means of dealing with your fellows noting that a lot of poor health expenditures were in the 19 to 34-year-old males, and that these were associated with the parts of the model that are not captured by the pure self-reported poor health, and that's correct. 14:43:12 14:43:18 14:43:24 14:43:36 14:43:44 14:43:50

And, in fact, the estimate on certainty is much, much greater, as you can see here, when you break out the group where those 19 to 34-year-old males are having an influence. 14:43:54 14:43:58 14:44:04 14:44:10

An estimate of all the variability in that group, not just looking for one particular group like that, but indeed encompassing them and any other imbalances in the data that might be similar we see that the mixed effects on page 6 and as we note has a much, much higher relative error. 14:44:14 14:44:16 14:44:22 14:44:28 14:44:32 14:44:38

Q. Did you calculate the relative error for diminished health status pure and mixed together as it was presented in your June report? 14:45:18 14:45:22 14:45:24

A. It may have been calculated at some point in the program. I can't say as I recall. 14:45:34 14:45:36

Q. Did you split up diminished health pure and diminished health mixed before or after any such calculation was made? 14:45:46 14:45:54 14:45:56

A. We certainly split them up before any jackknife or relative error calculation was made. 14:46:10 14:46:16

MR. LOVE: Can we take a break sometime in the next few minutes? 14:46:22 14:46:24

MR. BIERSTEKER: We can take it now if you want. 14:46:26 14:46:28

(A break was taken.) 14:46:32

(Mr. Garnick left the deposition room.) 14:54:54

BY MR. BIERSTEKER:

Q. There were other changes in the way you presented the results besides the change in diminished 14:56:00 14:56:02

health. In your June report you provided separate estimates for your lung cancer/COPD model, part of your refined model, and your CHD/stroke refined disease model. And in November the two were combined. Why did you do that? 14:56:08 14:56:16 14:56:22 14:56:28 14:56:30

A. The focus of the November report was on relative errors. And when you're talking about variation on relative errors, there's always a problem in exposition in the sense that on average relative 14:56:36 14:56:42 14:56:48 14:56:54

errors get larger the finer you split things. 14:56:58

And to the extent you have consistent 14:57:00

groups of estimates and consistent methodology you 14:57:02

usually in my experience want to aggregate as much 14:57:12

as is reasonable there in order to get a fair 14:57:16

summary of variation. 14:57:18

Q. But the methodologies for lung cancer/COPD and 14:57:24

CHD/stroke were different, weren't they? 14:57:28

A. There were some differences, but the basic 14:57:34

methodology was very similar reliant on information 14:57:40

on the claims records for currently treated major 14:57:48

diseases and were similar in terms of the estimates 14:58:00

as to the SAFs and how they relate to outside 14:58:08

literature and other checking sources. 14:58:14

So we made the decision that for purposes 14:58:18

of presenting variances, those were more similar 14:58:22

than different. 14:58:24

Q. The jackknife programs, though, calculated relative 14:58:32

errors for the lung cancer/COPD and CHD/stroke model 14:58:38

separately, didn't it? 14:58:42

A. I certainly have the capability of doing that and 14:58:44

were probably run. 14:58:46

Q. And so this is more of reporting convenience than it 14:58:54

is a calculation convenience? 14:58:56

A. Well, it's a reporting convenience, but to some 14:59:02

extent also an interpretation convenience. If 14:59:04

you're getting similar results in different groups, 14:59:10

to some extent those reinforce each other in terms of increasing the certainty you have about the results. 14:59:14 14:59:18 14:59:18

Q. In what sense were the estimates similar, I mean the results, we already talked about the method effect. 14:59:54 15:00:00

A. Well, they were all positive. They were all substantial as compared to the kind of SAFs you get with diminished health and nursing homes. 15:00:02 15:00:08 15:00:12

They all matched up in a reasonable sense with the attributable mortality percentages you see in the literature, and they all were -- all had small relative errors or smaller relative errors using the core model. 15:00:18 15:00:26 15:00:36 15:00:38 15:00:42

Q. I mean, we're talking about the presentation here 15:00:46

for the full model, right? 15:00:48

A. Yes. 15:00:48

Q. You also in June presented results for the different groups, the public aid versus the Blue Cross/Blue Shield, and you didn't do that this time. Was there a reason? 15:01:26 15:01:30 15:01:34 15:01:34

A. Basically the same reason, aggregating for purposes of presenting relative errors. 15:01:40 15:01:44

Q. In the end, though, the jury's going to be asked to award money not to the plaintiffs collectively but to them individually, right? 15:01:46 15:01:52 15:01:52

A. Well, you're the lawyer, but I wouldn't be surprised by that. 15:02:00 15:02:02

Q. Let's talk about diminished health for a moment. 15:02:22

Just to sort of set the stage, they basically are -- it's a simplified level, three sets of regressions in the diminished health model. 15:02:30 15:02:34 15:02:38

The first one predicts previous disease, doctor ever told you. The second one predicts health status. And the third set predicts expenditures. 15:02:42 15:02:44 15:02:46 15:02:46

A. Yes. 15:02:48

Q. All right. Now, the second set of regressions you say in the report, on page 7, estimates the extent to which smoking is associated with self or with 15:02:58 15:03:06 15:03:12

poor, excuse me, self-reported health, do you see that? 15:03:16 15:03:16

A. Uh-hm. 15:03:16

Q. And is that what the second regression basically does? 15:03:20 15:03:20

A. Yes. 15:03:26

Q. Okay. 15:03:26

A. An ordered probit ability. 15:03:38

Q. And in the expense regressions, the third set of regressions, self-reported health status is one variable, right? 15:03:44 15:03:48 15:03:50

A. Well, the latent index conditioned -- 15:03:56

MR. LOVE: Just finish your answer. 15:04:00

BY MR. BIERSTEKER:

Q. Go ahead, I understand. Finish your answer. 15:04:04

A. In the expenditure equations, I believe it's the 15:04:08

latent index of health status conditioned on reported health status. 15:04:14 15:04:16

Q. And there's also a smoking and insurance interaction, pubsmk and privsmk, right? 15:04:24 15:04:28

A. And diminished health I think it's also former and current. 15:04:32 15:04:44

Q. Okay. And those smoking and insurance interaction terms are the effect of -- excuse me, measure the effect of smoking status and insurance status 15:04:50 15:05:02 15:05:08

together on the probability and level of a health care expenditure, right? 15:05:18 15:05:20

A. Well, in a sense I think I have the sense you have. You're basically working on six degrees of freedom here, basically sub-estimates of effect on expenditures of former, current and never-smokers in each of your two groups. 15:05:30 15:05:34 15:05:38 15:05:44 15:05:46

Q. Right. But it's not just the effect of their smoking status, it also is their insurance status together with their smoking status that you're quantifying, right? 15:05:54 15:05:58 15:05:58 15:06:00

A. Well, I may be getting close to a point where I need to check the data, but I think that with the variables for private and public in there, in a sense those are measuring the effects of the insurance programs. 15:06:24 15:06:34 15:06:40 15:06:44 15:06:44

And then the other ones are measuring the additional effects within those programs for smokers, either former or current. 15:06:50 15:06:52 15:06:56

Q. So is it your testimony that these interaction terms measure the contribution of smoking alone to health care expenditures? 15:07:22 15:07:32 15:07:32

A. Well, the four terms that contain smoking in the model address the additional effects of smoking beyond everything else that's captured in the 15:07:52 15:07:56 15:08:00

model. 15:08:00

Q. Well, it's the additional effects of smoking and insurance status, isn't it? 15:08:08 15:08:10

A. Well, I believe that the additional effect of insurance status is essentially measured by having the insurance status variables in there and then the additional effect on top of that of being a former current smoker is then measured by the additional terms. 15:08:36 15:08:40 15:08:42 15:08:46 15:08:48 15:08:50

Q. So to come back to the question I asked before, which was: Is it your testimony that the smoking and insurance interaction terms for the diminished health model in this last of the three sets of regressions reflects the contribution of smoking status alone to health care expenditures over and above poor health status and over and above has a doctor ever told you? 15:08:52 15:08:56 15:09:00 15:09:06 15:09:10 15:09:14 15:09:20 15:09:20

A. I think that's a fair characterization in that they measure the effect of smoking alone on top of everything else that's in the models. 15:09:48 15:09:50 15:09:52

Q. In any event, the smoking insurance interaction 15:09:58

terms measure that effect over and above the contribution of self-reported health status, poor health status and has a doctor ever told you, right? 15:10:04 15:10:08 15:10:12 15:10:12

A. That's correct. 15:10:12
Q. Now, what part of the contribution of these interaction terms, smoking and insurance interaction terms, is a behavioral effect? 15:10:28 15:10:32 15:10:46
A. I don't know. 15:10:48
Q. And do you know what part of it is a health effect? 15:10:54
A. I don't know. 15:10:56
Q. Now, when you estimate the pure health effects, you include some of the contribution of the smoking and insurance interaction term in that estimate, right? 15:11:08 15:11:14 15:11:18
A. Certainly the great bulk of what's captured in those terms goes into mixed effects. Whether there is something that is captured in pure health, I couldn't say without going back to the equations and thinking about it some more. 15:11:52 15:12:00 15:12:06 15:12:12 15:12:14
Q. Let me ask you about my understanding of how you did the pure health part and see if that helps us along, and maybe it won't. Let's try. 15:12:16 15:12:20 15:12:22
In both the probability and level of expenditure in both equations, you include the coefficient for the smoking and insurance interaction terms appropriate for that group, multiplied by the average smoking prevalence for that group in BRFSS? 15:12:26 15:12:30 15:12:36 15:12:38 15:12:42 15:12:44

25 A. Correct. 15:12:44

1 Q. Why is that in there? Why is that expression in the 15:12:52
2 pure health effects estimate? 15:12:54
3 A. Oh, that's a way to -- essentially it's a standard 15:13:00
4 way to adjust the intercept to make it -- it's 15:13:04
5 essentially equivalent to fitting the same model but 15:13:10
6 with a different intercept term because you no 15:13:14
7 longer have these additional terms in there. 15:13:16
8 But mathematically you get essentially the 15:13:20
9 same result by keeping the old coefficients in there 15:13:26
10 and noting what the proportions of people are to 15:13:30
11 which those are applied, so it's basically a 15:13:34
12 computation convenience. 15:13:40
13 Q. Okay. Well, let me pursue it a little further. If 15:13:44
14 you look in your report where you have the list of 15:13:46
15 things that you changed from last time on page 10, 15:13:52
16 there's an item number 6. 15:13:58
17 It says, "In the current treatment 15:14:00
18 equations, the smoking factor now has the correct 15:14:04
19 one or zero value"? 15:14:06
20 A. Sorry, where are we? 15:14:08
21 Q. Number 6 on page 10. 15:14:10
22 A. Yes. 15:14:14
23 Q. In other words, you had an average BRFSS smoking 15:14:18
24 prevalence for the group multiplier previously in 15:14:22
25 the current treatment equations, didn't we? 15:14:24

A. In current treatment? 15:14:32
Q. Yeah. 15:14:32
A. Well, it's my recollection in going through these 15:14:42
that this comment refers only to -- this refers to a 15:14:46
factor within the NMES models. 15:14:50
Q. What do you mean the NMES models, all of these are 15:14:54
estimated in NMES, right? 15:14:56
A. Yes, but what I'm saying is here this particular 15:15:04
correction I don't believe was intended to reflect 15:15:08
anything in the way that the models were applied to 15:15:12
the BRFSS cells. 15:15:14
Q. You don't think that when you put the BRFSS folks in 15:15:26
that you used that term? 15:15:28
A. No, I'm sure the term is used. 15:15:30
Q. Okay. 15:15:32
A. I'm simply saying that there was a variable in NMES 15:15:34
used in the fitting of the equations which didn't 15:15:38
have the one or zero value coming out of NMES when 15:15:42
the maximum likelihood fits were run and in the 15:15:48
current model it does. 15:15:48
Q. I thought maybe this was the same issue here, you 15:15:52
don't think it is, in any event? 15:15:54
A. Same issue as what? 15:15:56
Q. We had the same multiplier times a coefficient in 15:16:00
the probability and level of expenditure equations 15:16:02

in the refined disease models earlier. You took that out and instead of multiplying it by smoking prevalence, you now multiply it by one basically. 15:16:06 15:16:08 15:16:12

And here you're multiplying again by the percentage BRFSS smoking not one, and I'm asking you is that right? 15:16:16 15:16:20 15:16:20

A. Good heavens. I think I would have to go back to the equations in the data provided to check that. I don't think I could -- I would feel reluctant to give you an answer right here. 15:17:20 15:17:24 15:17:30 15:17:32

Q. Maybe we could take a short break and he could look at the Miller transcript if he thinks it would help. And if it doesn't, we can just move on. Do you want to do that? 15:18:06 15:18:08 15:18:12 15:18:12

MR. LOVE: Sure, take a quick look at it. 15:18:16

MR. BIERSTEKER: Let's go off the record. 15:18:22

(Off the record.) 15:19:14

MR. BIERSTEKER: Back on. 15:20:36

THE WITNESS: Stepping back, I can confirm to you that we do use the average percentages in BRFSS for the diminished health in order to split pure health from the other. I mean, that's certainly correct. 15:20:38 15:20:40 15:20:44 15:20:48 15:20:48

Now, here we're in currently treated. And before there were issues because of the use of 15:20:52 15:20:58

testimation, and those issues aren't there with the full model. I can say that. 15:21:04 15:21:08

I believe that this coefficient in number 6 had to do with NMES and not the use of a percentage out of BRFSS. 15:21:10 15:21:14 15:21:16

But I would have to check and get back to you on the use of BRFSS smoking percentages in the application of the currently treated model. I can't tell you any more about that right now. 15:21:22 15:21:30 15:21:32 15:21:34

BY MR. BIERSTEKER:

Q. All right. And I appreciate that. And as we discussed off the record, if there's a problem here, you guys will let me know. 15:21:38 15:21:42 15:21:42

MR. LOVE: Maybe just tell me -- I don't understand the question you want answered. 15:21:44 15:21:46

MR. BIERSTEKER: I want to know if the percent BRFSS multiplier of the coefficient of the smoking and insurance interaction terms in the probability and level of expense for the pure health effects pathway is wrong, whether that multiplier should be different. 15:21:48 15:21:52 15:21:56 15:22:00 15:22:04 15:22:06

And now I'm going to ask a couple follow-up questions to explore that a little bit with you, if I may. 15:22:08 15:22:10 15:22:12

MR. LOVE: Percent BRFSS multiplier -- 15:22:22

MR. BIERSTEKER: Yeah, is that the right multiplier to use. 15:22:24 15:22:26

BY MR. BIERSTEKER:

Q. Doctor, could we just explore this? I mean, that was not a question, that's the question we're going 15:22:28 15:22:30

to look into. 15:22:34

A. Correct. 15:22:34

Q. Well, the question arose in my mind for two reasons. One, the reference here to the changed number 6 on page 10 of your supplemental report, and that's discussed in Dr. Miller's deposition that you've reviewed. 15:22:40 15:22:42 15:22:46 15:22:48 15:22:50

There's another reason why the question occurs to me. 15:22:50 15:22:52

A. Could I -- would you write down page 211 of -- 15:22:58

Q. That's the second day. 15:22:58

A. Miller, Volume II. 15:23:02

Q. Excuse me. Let's just for purposes of discussion assume there's one smoker in the world, okay, it just helps me to do this. 15:23:12 15:23:16 15:23:18

And if that were the case and then there was only one nonsmoker, you would get one estimate for the diminished health status pure effects. On the other hand, if there were 99 nonsmokers, it seems to me you would get a different estimate for 15:23:32 15:23:36 15:23:44 15:23:46 15:23:50

the smoking attributable pure diminished health smoking attributable expenditures for that same lone smoker; is that right? 15:23:54 15:24:00 15:24:00

A. I'm going to have to check on that. 15:27:36

Q. It doesn't make any sense to me that a smoker's probability and level of a pure diminished health status smoking attributable expenditure would depend 15:27:40 15:27:44 15:27:48

upon how many nonsmokers there are in BRFSS, but go ahead and pursue it. 15:27:52 15:27:54

THE WITNESS: Do you want to write that down, also. 15:28:00 15:28:00

MR. BIERSTEKER: I think it's the same issue. 15:28:02 15:28:04

MR. LOVE: Yeah, it's the same. 15:28:06

THE WITNESS: Okay. Never mind. 15:28:12

BY MR. BIERSTEKER:

Q. Does seat belt use in your models just control for seat belt usage or does it proxy for other things? 15:28:48 15:28:52

A. It's intended as a proxy. 15:28:56

Q. Does overweight just control for overweight or does it proxy for other things, too? 15:29:04 15:29:06

A. Well, almost any variable -- cancer is a proxy as well as controlling for itself. 15:29:42 15:29:42

Q. Does smoking -- well, can smoking serve as a proxy then for things other than smoking? 15:29:52 15:29:54

A. It is possible. 15:30:06

Q. Do you think it does? 15:30:08

A. I believe we said in our first report addressing this issue, which I still believe to be correct, that based on published literature and our discussions with Dr. Samet, it is reasonable to consider smoking as effectively capturing its own effects to a reasonable degree in our models. 15:30:20 15:30:24 15:30:28 15:30:36 15:30:42 15:30:46

Q. And, in fact, it is your assumption that smoking controls for itself, right? 15:31:12 15:31:18

A. To a reasonable degree of approximation and based on the sources I just cited. 15:31:24 15:31:26

Q. How close does it have to be to be a reasonable degree? 15:31:44 15:31:44

A. I don't have a level, but based on the literature and my discussions with my colleagues and their experience, including that of Dr. Samet, we are within a reasonable degree here. 15:32:06 15:32:10 15:32:14 15:32:16

Q. I know, but where do you draw the line? 15:32:20

A. I don't have a line to draw from here. 15:32:22

Q. So I'm going to have to try to draw one with you then. If smoking, if the smoking variable, 20 percent of the effective smoking variable, was a proxy effect, would that be acceptable? 15:32:28 15:32:34 15:32:38 15:32:40

A. I don't know. I would have to think about what that 15:32:44

meant, where that number came from, discuss it with Dr. Samet, look at the literature. I just couldn't speculate without knowing all the attending circumstances. 15:32:48 15:32:54 15:32:58 15:32:58

Q. Is there a way to empirically examine the extent to which smoking might be serving as a proxy for other factors not included in your model? 15:33:02 15:33:06 15:33:10

A. An empirical check or I should say sets of empirical checks I believe I would characterize in that my result from various studies in the literature where they've actually controlled for other factors and found no material effect on the smoking 15:33:44 15:33:48 15:33:52 15:33:54 15:33:56

coefficients. 15:34:10

Q. And what were those studies? 15:34:12

A. The Surgeon General's Report uses that phrase in summary of studies. Ones that I've looked at in particular would be studies of the CPS-2 population. 15:34:22 15:34:28 15:34:32 15:34:32

Q. That's all mortality, isn't it? 15:34:34

A. That's correct. 15:34:34

Q. Can your models be used to calculate health care costs attributable to being overweight in the same way that you did it for smoking? 15:35:08 15:35:12 15:35:14

A. These models are all built in consultation with literature on smoking and on consultation with 15:35:24 15:35:28

Dr. Samet on the epidemiology. 15:35:32

And any investigation of other conditions would seem to me have to start out on the same basis. 15:35:38 15:35:42 15:35:44

Q. Well, being overweight we know isn't good for one's health, is it? 15:35:52 15:35:54

A. As a statistician, I've not done any studies of overweight. I believe there are maybe health effects, that's why it's in our models. 15:36:06 15:36:12 15:36:16

But if there's anything additional, it would need to be addressed. To address more specific issues of that, I would have to consult an epidemiologist before making any pronouncements. 15:36:20 15:36:30 15:36:34 15:36:38

Q. You say in your November 17 report if you'd turn to page I think 2 that your updated estimates, at the 15:36:46 15:36:54

top of the page there, I think the third sentence, "The updated estimates primarily reflect suggestions made by defendants' experts in commenting on our initial report." Do you see that? 15:36:58 15:37:00 15:37:02 15:37:04 15:37:04

A. Yes. 15:37:06

Q. And then later on you say that -- you basically suggest that the defendants urged the full model approach at the bottom of the page, do you see that? 15:37:10 15:37:14 15:37:16 15:37:16

A. It says, "adopting the suggestion of defendants' experts to retain all explanatory factors." 15:37:26 15:37:28

Q. Yeah. What expert made that suggestion? 15:37:30

A. I believe we may discuss that comment in a footnote here. 15:37:46 15:37:46

Q. So you're referring to the items in footnote 2? 15:38:08

A. Correct. 15:38:10

Q. All right. Isn't it true that in June you first presented defendants, in turn their experts through us, with your models? 15:38:18 15:38:24 15:38:24

A. I'm sorry? 15:38:26

Q. Isn't it true that you first produced your models to the defendants in June of last year? 15:38:30 15:38:32

A. Yes. 15:38:36

Q. Okay. And isn't it also true that at least in looking at the variables included and excluded from your various equations that there's no apparent 15:38:40 15:38:46 15:38:48

pattern in the June report to what variables are included or excluded on the face of the materials you produced in June? 15:38:54 15:38:58 15:38:58

A. I don't recall. 15:39:22

Q. Okay. Well, Doctor, isn't it true that the first time that defendants learned about your testimation approach was when Dr. Miller was deposed in, I believe, August? 15:39:26 15:39:32 15:39:40 15:39:40

A. Again, I don't -- I mean, I can't confirm or deny when was the first time they learned of that. 15:39:52 15:39:56

Q. Okay. Well, if that were the case, when the defendants' experts wrote their reports in July, they wouldn't have known about the testimation approach that you've employed, right? 15:40:02 15:40:04 15:40:08 15:40:10

A. That is possible. 15:40:12

Q. And that's what they're doing here is they're complaining that they can't tell how you decided to include which variables or which equations, right, isn't that what's going on with the citations you've got in footnote 2? 15:40:22 15:40:26 15:40:32 15:40:34 15:40:36

A. Well, it seems to me those, beyond not knowing, these are making pronouncements about the models as they are. 15:41:02 15:41:06 15:41:06

Q. All right. Anyway, what you did when you moved to the full model is add additional variables that were, I think in Dr. Miller's words, not anywhere near being statistically significant? 15:41:20 15:41:24 15:41:36 15:41:38

A. Well, I'm certainly not in a position to 15:41:52

characterize that wording, but they were variables that did not meet some significance threshold. 15:41:54 15:41:58

Q. And that was the P value of approximately .15, right? 15:42:02 15:42:02

A. I believe that's approximately right. 15:42:04

Q. Okay. And when you add these strongly insignificant variables -- 15:42:22 15:42:24

A. I would not characterize them that way. 15:42:26

Q. All right. When you add these insignificant variables -- how's that? -- to the refined disease models, your estimates go down, right? 15:42:30 15:42:40 15:42:46

A. To the currently treated disease models? 15:42:52

Q. Yeah. 15:42:52

A. Well, sitting here now I can tell you that the net effect of full model and the corrections is to make the estimate go down. 15:43:24 15:43:34 15:43:34

Q. I'm sorry, say that again. Oh, yes, goes down, right. Well, what does that mean? 15:43:36 15:43:40

A. What does it mean? 15:43:42

Q. Yeah, what does it mean? 15:43:44

A. It means they went down. 15:43:46

Q. In fact, you say that most of the change was due to the full model effect, right? 15:43:52 15:43:54

A. Most of the change in the totals. 15:44:02

Q. Right. Well, and I'm asking, when you add these statistically insignificant variables to the currently treated models, your estimate goes down. 15:44:10 15:44:18 15:44:24

And I'm asking you, what's your interpretation of that? Do you have any interpretation of that? And if so, what is it? 15:44:30 15:44:30 15:44:32

A. Well, I'm sorry, again, stepping back to what I know right now, I don't know what the separated effect was on the currently treated of using full model or making some of these corrections. Am I missing something in your question here? 15:44:36 15:44:44 15:44:50 15:45:32 15:45:32

Q. Doctor, I would like you to assume that most of the effect of adding these statistically insignificant variables -- no, strike that. 15:46:04 15:46:16 15:46:18

That most of the drop, in effect, in the current treatment estimates from June to November is due to adding those variables? If that's the case -- 15:46:30 15:46:34 15:46:38 15:46:38

MR. LOVE: Assume that. 15:46:40

BY MR. BIERSTEKER:

Q. If that's the case, what interpretation do you have of that result? 15:46:44 15:46:46

A. Again, not knowing the validity of that assumption or not, but in any event I have not looked into that in enough detail to have an interpretation. 15:46:54 15:46:56 15:47:00

MR. LOVE: If we could take one last break. 15:47:14 15:47:16

MR. BIERSTEKER: Why don't we just finish up, if we could, this small line. 15:47:18 15:47:20

MR. LOVE: I can wait. 15:47:24

BY MR. BIERSTEKER:

Q. And in the diminished health status estimate, which you present as a block here on page 2, the numbers go up when you add these insignificant variables when you move from the testimation to the full model. Do you have any interpretation of that change? 15:47:40 15:47:50 15:47:58 15:48:00 15:48:04 15:48:06

A. I've not looked into it in every detail, but most of the change appears to be related to the same phenomenon we talked about before in terms of aggregating results for relative errors. 15:48:16 15:48:20 15:48:24 15:48:30

Q. I'm sorry -- 15:48:36

A. When you have a -- to control for various things, you know, there are a variety of equations that are fit here in the line of subsetting that goes on in various groups. 15:48:50 15:48:54 15:48:56 15:48:58

And to do that, a necessary consequence is that your sample size goes down in each of the groups. So an effect in the models may be entirely consistent from one model to the next, and that from one standpoint reinforces your view of the situation from one model to the next because of the smaller sample size and starts dropping out in certain models and testimation. 15:49:00 15:49:04 15:49:10 15:49:16 15:49:22 15:49:26 15:49:28 15:49:30

And when all of those are included, and examples of that I believe on reviewing this were 15:49:34 15:49:40

smoking factors and previously treated disease and possibly in self-reported poor health, though I don't remember that for sure, that those are all now retained where in some of them dropped out before. 15:49:44 15:49:50 15:49:52 15:49:56

Q. Did I understand you to mean, and I'm really just struggling with what you just said, that the over $400 million increase in your estimate for diminished health status was due to small sample size, sample sizes getting smaller? 15:50:14 15:50:20 15:50:30 15:50:42 15:50:46

A. One of the things that was involved was small sample sizes due to splitting up the equation fits into various subgroups. 15:50:50 15:50:56 15:50:58

Q. By adding more variables you mean, right? I'm not sure I'm following you. I'm trying to get a grip on it. 15:51:06 15:51:10 15:51:10

Do you break it up into more subgroups because you've added additional variables or do you break it up into more subgroups because you're doing DHS pure and DHS mixed or neither? 15:51:12 15:51:14 15:51:14 15:51:18

A. For example, you have six equations for predicting or associating, measuring the association, between reported poor health and various factors, including smoking. 15:51:34 15:51:38 15:51:44 15:51:44

Now, dividing those into six pieces means, speaking very roughly, you've now split your sample 15:51:48 15:51:50

six ways. 15:51:52

And what that means is, for example, there could be a very consistent and it appears from our full models to be a very consistent smoking effect on poor health in terms of the magnitudes. 15:51:56 15:52:00 15:52:02 15:52:06

But in a testimation process, just as an example, I don't know if this is right, but three of those could have dropped out because despite the fact that there was this consistency when you look at the data as a whole, when you look at each of the six parts individually, it didn't pass the threshold test. 15:52:10 15:52:14 15:52:16 15:52:20 15:52:22 15:52:26 15:52:26

Q. Okay. So do you mean, then, that the full model is a good idea separate and apart from whatever defense experts did or did not suggest? 15:52:50 15:52:54 15:52:54

A. It's a good idea from a couple of standpoints, apart from what they suggested. 15:53:02 15:53:04

MR. BIERSTEKER: All right. Why don't we take our break. 15:53:12 15:53:12

(A break was taken.) 15:53:14

BY MR. BIERSTEKER:

Q. Doctor, did you estimate any versions of your models between June 2 and November 17 that were not produced to defendants on November 17? 15:58:44 15:58:50 15:58:54

A. Well, nothing that I recall that was different in 15:59:12

substance. As you can see from some of these corrections, there are some of these that arose by examining things in the course of doing the 15:59:16 15:59:20 15:59:22

jackknife and the realizing that there needed to be a correction made and so went back and did it again. 15:59:24 15:59:28 15:59:28

I mean, those were essentially drafts of the current full model. 15:59:34 15:59:36

Q. And those corrections are the corrections that you noted in the report? 15:59:42 15:59:44

A. That's correct. 15:59:46

Q. And there weren't any others? 15:59:46

A. Well, I believe this is all in the production. There was a model run as a sensitivity test that had a different variance specification from the one here, and I believe you should have a complete set of results for that model. 15:59:48 15:59:52 15:59:54 15:59:56 16:00:04

I don't recall anything else other than what we reflected in footnote 4 here. 16:00:12 16:00:16

Q. Okay. Have you compared the expenditures of smokers and nonsmokers in the public aid subset of the NMES data set who were currently treated for a major tobacco related disease? 16:00:30 16:00:34 16:00:40 16:00:40

A. Say that again. 16:00:42

Q. Well, it's a question I asked last time and we 16:00:46

listen to a work product objection because it was after June 2, so I wanted to come back to it. 16:00:48 16:00:52

Have you compared the expenditures of smokers and nonsmokers in the public aid subset of NMES who were currently treated for a major tobacco related disease? 16:00:56 16:00:58 16:01:00 16:01:04

A. I may have done something like that, but I don't recall at this point. 16:01:34 16:01:34

Q. You don't remember whether you did or you don't remember what the results were? 16:01:38 16:01:40

A. Neither. 16:01:40

Q. Okay. You calculated smoking attributable expenditures from nursing homes using both the BRFSS and the NHANES smoking prevalence numbers, right? 16:02:18 16:02:22 16:02:26

A. Yes. 16:02:26

Q. Okay. And the BRFSS estimates were much higher than the estimates you got with NHANES, weren't they? 16:02:34 16:02:38

A. You know, this morning that's probably something I would have had at the front of my head, but right at the moment I'm honestly going to tell you I don't remember. 16:03:00 16:03:02 16:03:06

Q. You don't know which was higher. Do you remember why you chose to present the results that you obtained using BRFSS rather than the results you obtained using NHANES? 16:03:08 16:03:12 16:03:18 16:03:20

A. My recollection is that those are consistent with using other BRFSS data to reflect Minnesota that that was the reason for using BRFSS, as well, and NHANES. 16:03:24 16:03:28 16:03:34 16:03:34

Q. Now, when you used the NHANES data in your nursing home analysis, you used the NHANES population weights, right? 16:03:40 16:03:48 16:03:52

A. For calculating the deduction fractions, I believe 16:04:02

that's correct, yes. 16:04:08

Q. Were those weights highly variable? 16:04:12

A. NHANES does have some variation in the weights and 16:04:26
is discussed in some of the statistical literature 16:04:30
in NHANES. We did some sensitivity test to that, as 16:04:36
I recall. Well, in any event I'm meandering. There 16:04:44
is some variation in the weights in NHANES. 16:04:46

Q. And doesn't the literature also suggest that they're 16:04:48
skewed? 16:04:50

A. I believe that's correct. 16:04:50

Q. Was the sensitivity analysis you did to examine what 16:04:58
results you would get if you didn't use the 16:05:00
population weights in NHANES? 16:05:02

A. No, they were a couple of corrections, one suggested 16:05:14
by Dr. Zeger and another one I believe in some 16:05:20
literature on analysis of NHANES data. 16:05:22

Q. Do you recall whether the estimates that you got in 16:05:26

that sensitivity analysis were higher or lower than 16:05:28
the ones that are presented in your report? 16:05:30

A. No, I don't. The only thing I can recall is that it 16:05:36
did an investigation to try to ensure that the 16:05:40
weights as we were using them gave a reasonable 16:05:44
value. 16:05:44

Q. Well, if the weights are highly variable and skewed, 16:05:48
is it clear that they should be used at all? 16:05:52

A. I believe people in my recollection of the 16:06:00
literature discussing it -- well -- well, using no 16:06:38
weights at all is a possibility, and I don't recall 16:06:42

if that was part of our sensitivity tests or not. 16:06:44

Q. That wouldn't be an unreasonable thing to do? 16:06:52

A. I really couldn't say without looking at it further. It's a possible thing to do, but on the face of it seems to me kind of an extreme solution to a problem kind of going from one extreme to another. 16:06:58 16:07:02 16:07:08 16:07:16 16:07:16

But I really, you know, at this time couldn't say more without, you know, refreshing my recollection of some of that work. 16:07:18 16:07:22 16:07:26

Q. Since your deposition I think in August, have you identified any mistakes in the arithmetic used by the defense experts in either their June or their January reports? 16:07:42 16:07:54 16:07:56 16:07:56

MR. LOVE: Well, I will object, that's really not part of the supplemental report that we've put together. It's not part of the purpose of this deposition to quiz him on the defense expert reports. It isn't. It's really not. 16:08:04 16:08:06 16:08:08 16:08:10 16:08:14

MR. BIERSTEKER: Supplemental reports directly respond to the supplement, and I'm asking was there any mistake in the arithmetic that he discovered in those reports. 16:08:16 16:08:20 16:08:22 16:08:24

MR. LOVE: It doesn't talk about mistakes in arithmetic. 16:08:26 16:08:28

MR. BIERSTEKER: You're being far too narrow, I'm sorry, go ahead. 16:08:30 16:08:32

MR. LOVE: No, don't. 16:08:34

MR. BIERSTEKER: You're instructing him not to answer that. 16:08:34

MR. LOVE: Yes. 16:08:38

MR. BIERSTEKER: We'll certify that question, too. 16:08:42

(Question certified.) 16:08:44

BY MR. BIERSTEKER:

Q. Do you disagree with the opinions expressed by the defense experts in their January reports? 16:09:06

A. I'm not prepared this afternoon to really summarize in detail or even know what I disagree with. I can 16:10:20

tell you that having read them through there was nothing in there that made me feel that this was not a reasonable and well-founded estimate that we have here. 16:10:34

Specific disagreements, and I may be confusing some of the affidavits with reports, but while there were some comments about asking the wrong question which, again, as I noted in the previous deposition I just found irrelevant to the tasks that we set out here and tried to answer. 16:10:46

Beyond that, I am just not prepared to say at this time. I've read through them once. I probably did have some opinions as I read through it, but I really can't add anything more this afternoon. 16:11:14

Q. Is there any reason why if somebody estimated 16:12:04

directly from smoking and all the covariates you use in your models to health care expenditures for public aid people that they would get a different result than you get by looking at those people in three different models, the lung cancer/COPD, CHD/stroke and diminished health? 16:12:12 16:12:16 16:12:22 16:12:30 16:12:38 16:12:40

A. Well, there are any number of reasons when you start doing things differently. 16:12:44 16:12:46

Q. Is there any reason, theoretically, why it should 16:12:50

make a difference, if you use the same variables? 16:12:58

A. You'll have to be more specific about what's being done here. 16:13:02 16:13:02

Q. Well, if you estimated a regression from smoking and all your covariates the probability and the level of expenditure? 16:13:08 16:13:12 16:13:12

A. Yeah. 16:13:12

Q. For all of the public aid smokers, should you theoretically get a different result than you get by estimating the expenditures for those people in your three different models? 16:13:18 16:13:22 16:13:30 16:13:32

A. Well, I mean, any time we make changes, you're not likely to get identical results. I mean, I'm not quite sure how else to answer your question. I still don't know that I fully understand everything that you're saying about the three models. 16:13:40 16:13:48 16:13:52 16:13:54 16:14:00

Q. Well, would you -- you've got -- you carve up the people into three groups, right, people with lung 16:14:02 16:14:06

cancer/COPD, people with CHD/stroke and everybody else? 16:14:10 16:14:10

A. Yeah. 16:14:10

Q. That's the three I'm talking about. 16:14:12

A. Okay. 16:14:12

Q. If you just put all the people together and you estimated using all of your same covariates directly 16:14:16 16:14:20

from smoking and all those covariates to the probability and level of expenditure, should the estimates be reasonably close? Is there any theoretical reason why -- 16:14:22 16:14:26 16:14:32 16:14:34

A. Same populations we're talking about, I mean, we're putting the same people in there? 16:14:36 16:14:38

Q. Yeah, the public aid people. 16:14:40

A. And just the public aid people? 16:14:46

Q. Yeah. 16:14:46

A. Oh, well, I mean, one problem of looking at just public aid people is that you miss a giant aspect of public aid expenditures, which is the extent of which people move on to public aid as the result of many instances of illness. I would think that would be one. 16:14:52 16:14:58 16:15:00 16:15:04 16:15:10 16:15:12

Q. Did you estimate the extent to which people move on to public aid? 16:15:14 16:15:16

A. I have looked at that as some summaries. In effect that is what our current models are addressing by looking at the effects of poor health for joint population and then looking at expenditures with 16:15:26 16:15:30 16:15:34 16:15:38

Medicaid in the models. 16:15:42

Q. But you've made no estimate of the probability that smokers and nonsmokers will become eligible for public aid, right? 16:16:38 16:16:42 16:16:44

A. I made some examinations of that question. 16:17:10

Q. That's not reflected in either of these reports, is it? 16:17:12

A. No. 16:17:12

Q. What were the results of your investigations into that question? 16:17:14 16:17:16

A. If you look at simple averages of public aid expenditures, rather than total expenditures, thereby in a simple way both probability of being on public aid and the level of public aid expenditures, there were controlling for age and sex very consistent increased average public aid expenditures for smokers versus nonsmokers. 16:17:26 16:17:34 16:17:38 16:17:44 16:17:50 16:17:56 16:17:58

MR. BIERSTEKER: I would like to note something on the record, and that is a couple times today Dr. Wyant has talked about work that he had done that wasn't included in his reports; for example, we just heard about this comparison. 16:19:42 16:19:44 16:19:48 16:19:52 16:19:56

And we heard about doing confidence result and error estimates on the core model. And he also submitted an affidavit in connection with the motion in limine where he calculated smoking attributable deaths in Minnesota that was also referred to during 16:19:58 16:20:04 16:20:06 16:20:10 16:20:14

the course of the deposition. 16:20:14

And none of that stuff is reflected in the 16:20:18

reports and none of that work product, the basis for 16:20:22
those calculations, have been provided to us. 16:20:32
And I'm happy to hear about them here in 16:20:32
the deposition, that's fine, but it would be 16:20:34
defendants' position that that's not an appropriate 16:20:34
area for testimony at trial because it was not 16:20:38
disclosed in the reports and because we don't have 16:20:40
the work product that underlies those 16:20:42
investigations. 16:20:44
MR. LOVE: That's your statement for the 16:20:48
record, and the court will decide what's appropriate 16:20:50
testimony at trial. 16:20:50
MR. BIERSTEKER: I understand that, but I 16:20:54
did want to make that statement. 16:21:00
Why don't you give me a few minutes and we 16:21:02
may be done, we may not be. 16:21:04
(A break was taken.) 16:21:06
BY MR. BIERSTEKER:
Q. Apart from reviewing the defense expert supplemental 16:24:24
reports, which you've only had for I guess a little 16:24:26
over a week now, is your work finished? 16:24:34
A. I don't know how to answer that. I don't have any 16:24:40
immediate plans to do anything, other than look into 16:24:44
this question you posed here. I don't know what to 16:24:56
tell you beyond that. 16:24:56

Q. I mean, as far as you're concerned, you're done but it's subject to what further directions you may or may not be given by the counsel? 16:24:58 16:25:02 16:25:04

A. Well, basically. 16:25:08

Q. We had a discussion earlier today, just to orient you, about what smoking attributable expenditure meant. 16:25:26 16:25:30 16:25:32

And here's my question: Given that, why didn't you estimate a model that was limited to expenditures made to treat smoking-related diseases and conditions as opposed to a model that was not limited in that way? 16:25:52 16:26:04 16:26:14 16:26:24 16:26:26

A. It seems to me I've answered that question numerous times, both today and in August. 16:26:38 16:26:44

MR. LOVE: I think you're right, but if you can say it one more time, great. If not, refer back to your old answers, that's fine, too. 16:26:46 16:26:50 16:26:52

THE WITNESS: At the risk of contradicting myself at this hour of the day, I don't feel that there's any way to effectively do that, given the nature of information as it's recorded in the medical records. 16:26:58 16:27:02 16:27:06 16:27:08 16:27:10

And I think the way we did do things is the best way to estimate statistically what the dollars related to treatment of these diseases is. 16:27:16 16:27:20 16:27:24

BY MR. BIERSTEKER:

Q. When you said medical records, you meant the claims data? 16:27:32

A. I'm sorry, the claims billing records. 16:27:34

Q. And you didn't think you could reliably separate out dollars spent to treat the major tobacco related diseases say, for example, and dollars that were spent to treat other conditions? 16:27:38 16:27:40 16:27:44 16:27:46

A. Only statistically in the way that we did it. 16:27:48

Q. Is it that the -- well, what is the problem with the claims data that prevents you from doing that? 16:28:04 16:28:08

A. Well, I'm not sure I would characterize it necessarily as a problem, and there are probably several aspects to it. But, for example, there are many generic ICD9 codes. 16:28:18 16:28:20 16:28:24 16:28:30

For example, if someone -- a typical pattern you might see in looking at some of these records is someone gets cancer, based on the claims data, and starts receiving radiation therapy. 16:28:32 16:28:36 16:28:40 16:28:44

Radiation therapy doesn't have an ICD9 code on it typically in billing practices that reflects lung cancer, for example, it just has a generic radiotherapy code. So you would have to develop some rule for picking those up. 16:28:48 16:28:52 16:28:56 16:29:00 16:29:02

Prescription drugs is another example because prescription drugs never have diagnoses associated with them typically because you go to the 16:29:06 16:29:10 16:29:14

pharmacist, you don't go to the doctor. 16:29:16

Another issue is metastasis because 16:29:26

primarily lung cancer that metastasizes all of the 16:29:30

sudden you're seeing records of ICD9 codes 16:29:34

indicating secondary malignancies. 16:29:36

I believe that those are reasonably 16:29:38

treated as medical conditions stemming from lung 16:29:42

cancers which, of course, we assume causation from 16:29:46

Dr. Samet. 16:29:50

There may be other examples. I think 16:29:54

those are three. 16:29:54

Q. Is there another one maybe if you had, say, a 16:30:00

hospitalization in the list of more than one 16:30:04

diagnosis which I guess we can do, right? 16:30:08

A. Either they may list more than one or the equivalent 16:30:14

problem where you have a doctor's visit and they'll 16:30:16

only list one but it's hard to know. 16:30:20

Typically the way these records are 16:30:22

constructed, if you have an ongoing chronic 16:30:24

condition, and this is in my experience, obviously, 16:30:32

but if you have another acute condition, you don't 16:30:36

simply go to the doctor while you're being treated 16:30:40

for lung cancer and talk about nothing but your 16:30:42

cold, for a crude example, and it's very hard to 16:30:48

split those dollars out. 16:30:48

I mean, that's not necessarily a good 16:30:50

example because they're both respiratory. 16:30:54

Q. If somebody say checked into the hospital with lung cancer and diabetes, say, for example, it would be hard to separate out the dollars that were spent on the lung cancer versus the dollars that were spent for the diabetes? 16:30:58 16:31:02 16:31:04 16:31:08 16:31:08

A. For that particular visit, except, you know, as I say, statistically over annual expenditures like we do it. 16:31:12 16:31:20 16:31:20

Q. Did you and your colleagues ever entertain the possibility of taking a survey of the Minnesota Medicaid recipients, for example? 16:31:44 16:31:48 16:31:52

MR. LOVE: I'll object to that question, as well. I don't see how it has anything to do with what we reported in the supplemental report, and the question would pertain to the basic estimate that's presented in the June report. I'll instruct you not to answer. 16:31:58 16:32:00 16:32:02 16:32:06 16:32:10 16:32:10

THE WITNESS: Early on -- 16:32:28

MR. LOVE: You're not to answer that question; you can let it go. 16:32:30 16:32:32

THE WITNESS: I'm sorry. If I could 16:32:38

clarify an earlier response, you asked about work being done, I certainly assume I'm going to be reviewing materials before trial and that sort of thing. 16:32:42 16:32:44 16:32:48 16:32:48

BY MR. BIERSTEKER:

Q. But not doing additional analyses is what I meant. Yes, I understand. 16:32:54 16:32:56

MR. BIERSTEKER: Well, I don't know that I have anything more. I think that that will do it. 16:33:00 16:33:02

MR. LOVE: All right. I have no questions and we'll read and sign. 16:33:04 16:33:04

(The deposition was adjourned.)

STATE OF MINNESOTA)
)
COUNTY OF HENNEPIN)

BE IT KNOWN THAT I, JENNIFER S. SATI, took the DEPOSITION OF TIMOTHY WYANT, Ph.D.;

THAT, I was then and there a Notary Public in and for the County of Hennepin, State of Minnesota;

THAT, I exercised the power of that office in taking said deposition;

THAT, by virtue thereof I was then and there authorized to administer an oath;

THAT, said witness, before testifying, was duly sworn to testify to the truth, the whole truth, and

nothing but the truth, relative to this action;

THAT, said witness reserved the right to read and sign the deposition;

THAT said deposition is a true record of the testimony given by the witness;

THAT, I am neither attorney nor counsel for, nor related to or employed by any of the parties to this action in which this deposition is taken and, further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, or financially interested in this action.

DATED THIS 25th DAY OF JANUARY, 1998.

_____

JENNIFER S. SATI, RPR, CRR
Notary Public, Henn. County, Minn.
My Comm. Expires January 31, 2000

ERRATA SHEET

RE: Minnesota Tobacco Litigation

TIMOTHY WYANT, Volume III

I, TIMOTHY WYANT, do hereby certify that I have read the foregoing transcript of the proceedings taken on January 24, 1998, and believe the same to be true and correct, except as follows:

PAGE	LINE	DESIRED CHANGE

_____ _____
Date Notary

_____ _____
Date Signature of Witness

PLEASE RETURN TO: Jennifer S. Sati, RPR, CRR
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